

NEWARK BAY STUDY AREA

ADDITIONAL SITES AND CANDIDATE PRPS FOR THE NEWARK BAY STUDY AREA

VOLUME IV OF IV

PRP DATA EXTRACTION FORM AND EVIDENCE CONCERNING:

EXXON MOBIL CORPORATION BAYONNE SITE

PREPARED BY: TIERRA SOLUTIONS, INC.

SUBMITTED TO: USEPA REGION II

MAY 2007



REFINING DEPARTMENT SITE REMEDIATION

April 25, 1997

Exxon Bayonne Plant
Site Remediation Administrative
Consent Order, Effective 11/27/91

Mr. Christopher Kanakis, Acting Section Chief New Jersey Department of Environmental Protection Division of Responsible Party Site Remediation Responsible Party Cleanup Element, 5th Floor 401 East State Street - CN-028 Trenton, New Jersey 08625-0028

Dear Mr. Kanakis:

Pursuant to Paragraph 42 of the Exxon Bayonne Plant Site Remediation Administrative Consent Order, enclosed please find four copies of the quarterly progress report for the 1st Quarter of 1997.

Please let me know if you have any questions.

Sincerely,

John E. Hannig

Site Remediation Project Administrator

JEH/kml Enclosures

Via Registered Mail - R 844 500 484





EXXON BAYONNE PLANT SITE REMEDIATION QUARTERLY PROGRESS REPORT JANUARY 1, 1997 through MARCH 31, 1997

Reference: NJDEP/Exxon Bayonne Plant Site Remediation Administrative Consent Order (ACO), effective November 27, 1991.

The following information is submitted to NJDEP pursuant to the quarterly progress reporting requirements of the ACO Paragraph 42.

- A. Requirements of the ACO Initiated in the Subject Period
 - 1. None.
- B. Requirements of the ACO Previously Initiated and Still in Progress
 - Continued vacuum truck purging at NAPL IRM sites in accordance with the schedule.
 - Continuation of Chromium IRM field work at the No. 3 Tankfield/Hook Road area.
 - 3. Continuation of field work on Chromium IRM Hex-Cr Sampling Plan.
- C. Requirements of the ACO Completed During the Subject Period
 - Submission of the quarterly progress report for the 4th Quarter of 1996, pursuant to ACO paragraph 42.
 - Submission of Annual Self-Guarantee, pursuant to the ACO Paragraph 53 financial assurance requirement; now on an April-cycle.
 - NJDEP Visits/Meetings:
 - Mike Kenney, John Boyer, Jeff Griesemer and Mary Hrenda of NJDEP's Case Management Team met with members of the Exxon Site Remediation Team in Trenton on January 23, 1997 to discuss Process Improvement initiatives.
- D. Requirements of the ACO Which Should Have Been Completed and Were Not None.
- E. Explanation of Any Potential Non-Compliance with Approved Work Plans, Schedules or Remedial Action Plans

None.

- F. Requirements of the ACO to be Initiated in Next Reporting Period
 - 1. Submission of Free Oil Recovery Program Scope of Work.
 - 2. Initiation of Free Oil Recovery Program field investigation.
 - Submission of response to NJDEP's 3/26/97 comment letter on the Trunk Line No. 1 Sewer IRM Report.
- G. Results of Additional Studies of Conditions at the Site

None.

H. Newly Discovered Areas of Historical (Pre-1980) Contamination

See Attachment 1.

I. Soil Pile Additions at Placement Areas

None.

J. NAPL IRM Quarterly Monitoring Summary

See Attachment 2.

SUMMARY of MAJOR SEWER LINE FINDINGS FOR LINES VIDEOED THROUGH DECEMBER 31, 1995 FORMER EXXON BAYONNE TERMINAL BAYONNE, NEW JERSEY

Location		Pipa	Pipa	1	Distance	Date	Tapa		Summary Tape Location
From	То	Dlam. (In)	Material	(FI)	Sewer Findings	Repaired	Number	Hr-Mln.Sec	Hr-Min.Sec
MAIN TRU	K LINE #1	1							
MH-1-7	MH-1-8	36	Cast Iron	114.0 1.	Bottom of pipe missing	1	E7	0-07,35	0-00.00
MH-1K-4	MH-1K-5	24	Cast Iron	21.0 1.	Bottom of pipe deteriorated	* × ₁	E33A	0-10,45	0-2.05
MH-1N-5	MH-1N-4	12	Cast Iron	55.0 1.	15 fool break in bottom of pips		E57A	0.06.00	0-04.54
MH-1P-5	MH-1P-26	24	Clay	6.0 1,	Cracked pipe along boltom		£67	0.01.21	0-07.50
MAIN TRU	NK LINE #2		22.5	0.00				a head	5.00
CB-2-4	MH-2-1	24	RCP	132.8 1.	Wood 2x4 protruding into pipe through joint	1	16	0-42.00	0-13,35
MH-2-8	7	10	Corrugated Metal	284.0 1,	Unable to determine end of line, but videolaped up to 284 feet. Unknown origin of line.		28		0-17,36
MH-2-13	MH-2-14	24	Terra Colla	83,3	. Hote in pipe at 9:00 with metal pipe protruding into tine.		13	0-30,44	0-17.56
MH-2-15	MH-2-14	24	Terra Colta	11.4 13.6 2	The Transfer of the Control of the C		12	0.06.40 0.07.48	0-19.50 0-20,48
MAIN TRU	NK LINE # 3								
MH-3-3	MH-3-5	18	. RCP	43.0	Joint offset and totally separated	1	126	0-07.43	0-21.45
MH3-9	MH3-10	21	RCP	33,7	1. Hote in pipe with infiltration at 4:00		133	0-7.38	0-22.24
MH3-9	MH3-8	21	RCP	13.0 16.9			133	0-27.20	0.23.20
				28.4			133	0-28.45 0-33.30	0-24,40 0-25,04
мнз-в	MH3-9	21	RCP	5.7	1. At Joint break from 3:00 to 8:00		133	0-39,15	0-25,32
МН3-14	MH3A-6	15	VCP	117.2	Broken and missing pipe section at 4;00 to 8;00 approximately 5 feet long		135	0.12.35	0-25,58

SUMMARY OF MAJOR SEWER LINE FINDINGS FOR LINES VIDEOED THROUGH DECEMBER 31, 1995 FORMER EXXON BAYONNE TERMINAL BAYONNE, NEW JERSEY

3A MH-3A-8	Dlam. (In)	Material	(FI)	Sewer Findings	Repaired	Number	Hr-Min.Sec	Hr-Min.Sec
								Til Milliose
	12	VTP	15.2	. Pipe severely cracked and broken around pipe IIII next joint at 16.8 ft.		125	0-07,50	0-26.41
			50.1	. Pipe missing and repaired (?) for next two feet from 9:00 to 2:00.		125	0-34,35	0-27.31
3B					1			4.
МН3В-7	12	RCP	29.4	Pipe broken and infiltration 5:00 to 6:00		132 132	0-17.10 0-23.00	0-29.44 0-30.35
			37.8	. Pipe broken and inilitration 4:00 to 8:00		132	0-29.30	0-31,18
LINE #4			100000			343	1 12 00	2 400
MH-4-4	24	Clay	187.1	1. Support column through top of pipe	1	46	0-55,30	. 0-32.26
AH-3-18A	24	RCP		. 1		86 86	0-00.52 0-56.15	0-34.27 0-35.15
L 4A								
MH-4A-3	12	Cast Iron	57.0	1. Possible break in bollom of pipe	1	49	0-12.15	0.37.20
MH-4A-8	12	RCP	156.2	1. Hole in pipe at 3:00		53	0-40.05 .	0-39,07
					1	53	0-46.30	0-39.58
MH-4A-6	12	RCP	8.7	1. Support column through top of pipe		56	0-02.55	0-41.10
L 4B					1	4		
MH-4B-1	12	Clay	19.0	1. Telephone pole through top of pipe		63	0-06.20	0-43,34
	1					1		
	LINE #4 MH-4-4 IH-3-18A - 4A MH-4A-3 MH-4A-8 MH-4A-6 L 4B	MH-3B-7 12 LINE #4 MH-4-4 24 MH-3-1BA 24 - 4A MH-4A-3 12 MH-4A-8 12 MH-4A-6 12 L 4B	LINE #4 MH-4-4 24 Clay 1H-3-18A 24 RCP - 4A MH-4A-3 12 Cast Iron MH-4A-6 12 RCP	3B MH3B-7 12 RCP 25.4 1 29.4 2 37.8 3 LINE #4 MH-4-4 24 Clay 187.1 1 11.0 403.1 1 12 AA MH-4A-3 12 Cast Iron 57.0 MH-4A-8 12 RCP 156.2 176.3 MH-4A-6 12 RCP 8.7	9:00 to 2:00. 9:00 to 2:00. 9:00 to 2:00. 12 RCP 25.4 1. Pipe broken and infiltration 3:00 to 5:00 29.4 2. Pipe broken and infiltration 5:00 to 6:00 37.8 3. Pipe broken and infiltration 4:00 to 6:00 LINE #4 MH-4-4 24 Clay 187.1 1. Support column through top of pipe 11.0 1. Large volume of water infiltrating through joint 403.1 2. Large volume of water infiltrating through joint 2. Large volume of water infiltrating through joint 4A MH-4A-3 12 Cast Iron 57.0 1. Possible break in bottom of pipe 156.2 1. Hole in pipe at 3:00 40. Hole in pipe at 2:00 MH-4A-6 12 RCP 8.7 1. Support column through top of pipe 14.4 14.5 14. Support column through top of pipe 14.4 15.5 15.5 15.5 15.5 15.5 15.5 15.5	9:00 to 2:00. RCP 25.4 1. Pipe broken and infiltration 3:00 to 5:00 29.4 2. Pipe broken and infiltration 5:00 to 6:00 37.8 3. Pipe broken and infiltration 4:00 to 8:00 LINE #4 MH-4-4 24 Clay 187.1 1. Support column through top of pipe 11-3-18A 24 RCP 11.0 1. Large volume of water infiltrating through joint 403.1 2. Large volume of water infiltrating through joint 403.1 2. Large volume of water infiltrating through joint 404 MH-4A-3 12 Cast Iron 57.0 1. Possible break in bottom of pipe MH-4A-8 12 RCP 156.2 1. Hole in pipe at 3:00 176.3 2. Hole in pipe at 2:00 MH-4A-6 12 RCP 8.7 1. Support column through top of pipe	9:00 to 2:00. State	3B MH3B-7 12 RCP 25.4 1. Pipe broken and infiltration 3:00 to 5:00 29.4 2. Pipe broken and infiltration 5:00 to 6:00 37.8 3. Pipe broken and infiltration 4:00 to 8:00 LINE #4 MH-4-4 24 Clay 187.1 1. Support column through top of pipe 46 0-55:30 HH-3-18A 24 RCP 11.0 1. Large volume of water infiltrating through joint 403.1 2. Large volume of water infiltrating through joint 86 0-00.52 403.1 2. Large volume of water infiltrating through joint 86 0-56.15 AMH-4A-3 12 Cast iron 57.0 1. Possible break in bottom of pipe 49 0-12.15 MH-4A-8 12 RCP 156.2 1. Hole in pipe at 3:00 176.3 2. Hole in pipe at 2:00 53 0-46.30 MH-4A-6 12 RCP 8.7 1. Support column through top of pipe 56 0-02.55 L4B MH-4B-1 12 Clay 19.0 1. Telephone pole through top of pipe 63 0-06.20

SUMMARY of MAJOR SEWER LINE FINDINGS FOR LINES VIDEOED THROUGH DECEMBER 31, 1995 FORMER EXXON BAYONNE TERMINAL BAYONNE, NEW JERSEY

Location		Pipa	Pipe	1	Distance	Dale	Tape		Summary Tape Location
From	To	Dlam. (In)	Material	(FI)	Sewer Findings	Repaired	Number	Hr-Min.Sec	Hr-Min.Sec
MAIN TRUI MH-5A-3	NK LINE #5 MH-5-3	24	Clay	179.0	. Severely cracked and pipe downstream looks oval (compressed).		105	0-57.00	0-44.25
MH-5-3	MH-5-5	24	VTP	75.9	. Pipe severely cracked and pipe downstream for next 12 feet looks aval (compressed).		109	0-37.35	0-45.25
	Contract of							.4	4.
MAIN TRU MH-6-1	NK LINE #6 MH-5-8	24	Clay	209,0	 Pipe changes to corrugated metal at this point. Appears as if the corrugated pipe was used to patch the existing pipe. Corrugated pipe is deteriorated. 		67	1-30,00	0-50.03
MH-6-3	MH-6-2A	24 .	Clay	149.2	 Burled manhole (MH-6-2A); bottom of pipe missing with water infiltration at 10:00 on opposite wall, above pipe to MH-6-2. 		83	1-14.30	0-51,32
MH-6-7	MH-6-8	36	Clay	107.5	 Pipe collapsed/broke at 12:00 to the next joint (approximately 3 (eet). 		96	00,86-0	0-53.30
LATE	RAL GA			7			1		1
MH-6A-5	MH-6A-7	24	Clay	88,5	Break in top of pipe from 10:00 to 4:00; there is hard material above the break, no soil visible	1	79	0-40.29	0-54,38
LATE	RAL 6D		1.7					1	
MH-6D-1	MH-6D-2	12	RCP	103.9	Hole in right side of pipe due to well boring drill		94	0-32,20	0-58.17
	ERAL GE								
MH-6E-1	MH-5C-1	36x42	RCP	234.2	1. Hole at 12:00 covered with wood		17	0-35,25	0-59,04
MH-6E-3	CB-6E-6	12	Clay	20.0	1. Pipe is collapsed		27	0-00.10	1-00,13
MH-6E-9	MH-6E-7	10	RCP	23.1	1. Severely separated joint, can see back behind joint	1	21	0-05.12	1-01.36

ATTACHMENT 2 BAYONNE

BAYONNE NAPL IRM QUARTERLY MONITORING REPORTS



Consultants in hydrogeology, environmental sciences and engineering, site investigation/remediation, ISRA and UST compliance

Dan D. Raviv, Ph.D. Kenneth B. Siet John J. Trela, Ph.D. Dawn M. Pompeo Christopher F. Zwingle, P.E.

NAPL MONITORING AND RECOVERY REPORT FIRST QUARTER 1997 BAYONNE PLANT BAYONNE, NEW JERSEY

DRAI JOB NO. 95C1517

prepared for:

Site Remediation

Exxon Company, U.S.A. P.O. Box 728 Linden, New Jersey 07036

prepared by:

Dan Raviv Associates, Inc. 57 East Willow Street Millburn, New Jersey 07041

April 23, 1997

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D	NAPL Recovery Graphs and Data Sheets (Wells EB19, PKMW11, PKMW12, PKMW14 and GMMW12) - Platty Kill Canal IRM
E	NAPL Recovery Graphs and Data Sheets (Well ITMW1) - Interceptor Trench IRM

NAPL MONITORING AND RECOVERY REPORT FIRST QUARTER 1997 BAYONNE PLANT BAYONNE, NEW JERSEY

DRAI JOB NO. 95C1517

1.0 INTRODUCTION

On behalf of Exxon Company, USA (Exxon), Dan Raviv Associates, Inc. (DRAI) has prepared this progress report summarizing the First Quarter 1997 (1Q97) light Non-Aqueous Phase Liquid (NAPL) Interim Remedial Measures (IRM) monitoring and recovery activities. This is in accordance with Exxon's November 27, 1991 Administrative Consent Order, individual IRM investigation reports, and previous quarterly NAPL monitoring and recovery reports submitted to the New Jersey Department of Environmental Protection (NJDEP). This report includes data for the Pier 7, Pier 6, Helipad, Interceptor Trench and Platty Kill Canal IRMs. In addition, the status of the Vacuum-Enhanced Recovery (VER) system at the Low Sulfur and Solvent Tank Field (LSSTF) IRM is provided.

The purpose of the IRM monitoring and recovery program is to measure the presence and thickness of floating NAPL in order to monitor its vertical and horizontal extent and to evaluate NAPL recovery operations. Field work was completed from January to March 1997 by Exxon. All of the data presented in this report was obtained by Exxon and supplied to DRAI. The activities summarized in this submission include: (1) quarterly fluid level measurements from select wells, sumps, manholes and surface water locations; (2) weekly NAPL recovery from wells at the Pier 7 IRM; (3) twice-weekly NAPL recovery from wells at the Platty Kill Canal IRM; and (4) weekly NAPL recovery from well ITMW1 at the Interceptor Trench IRM.

2.0 PIER 7 IRM

Quarterly measurements of depth to water and floating NAPL were obtained by Exxon at the Pier 7 IRM during low tide on January 22, 1997 and during high tide on January 13, 1997. Ground water elevations were calculated and corrected by DRAI for the presence of floating NAPL, when necessary (Tables I and II). Corrected ground water elevation contours and apparent NAPL thicknesses are presented on Figures 1 and 2. Contour map reporting forms are included in Appendix A.

NAPL recovery operations, overseen by Exxon, are performed weekly at 14 wells: EB51, EB52, EB56, EB58, EB59, EB62, EB65, EB66R, EB67, EB69, P7MW1, P7MW2, EBR11 and Sherry 3. NAPL recovery operations at 12 wells (EB51, EB52, EB56, EB58, EB59, EB62, EB65, EB66R, EB67, EB69, P7MW1 and P7MW2) are completed with a vacuum truck and dedicated PVC piping. As recommended in the previous quarterly report, NAPL recovery was initiated at wells EB51, EB56, EB59, EB65 and EB66R. Recovered NAPL volumes for 12 wells are tabulated and graphically presented in Appendix B. The NAPL volumes are calculated based on NAPL thicknesses measured in the well prior to evacuation. Total fluids (NAPL and ground water) are recovered at wells Sherry 3 and EBR11. With the exception of well EBR11, fluid volumes recovered from all the wells are summarized in Table III. Because a flow meter is not present on the discharge line from well EBR11, the volume of fluids pumped from this well is not known.

The following observations are based upon the fluid level measurements, the ground water elevation contour map and fluid pumping rates.

- (1) In general, the ground water flow direction is towards New York Bay and is consistent with historic measurements. At high tide, a reversal in the hydraulic gradient is indicated between New York Bay and the wells north of the southern gantry wall (EB59, EB60R, EB62 and P7MW1).
- (2) Floating NAPL was detected at 16 of the 24 wells at low tide (Figure 1) and at 15 of the 24 wells at high tide (Figure 2). The apparent NAPL thicknesses at low tide ranged from 0.01 foot (wells EB60R, EB69 and EBR10) to 2.10 feet (well P7MW1). At high tide, the apparent NAPL thicknesses ranged from 0.01 (wells EB50, EB51 and EB69) to 2.17 feet (well P7MW1).
 - NAPL thicknesses and locations are generally consistent with historic ranges.

 NAPL thicknesses at wells EB56, EB67 and P7MW2 were less than the historic maximums measured in the previous quarter.
- (3) Vacuum truck recovery operations at the Pier 7 IRM recovered approximately 78 gallons of NAPL. Approximately 61 gallons of NAPL were recovered from wells EB58, EB67 and P7MW1 located in the central portion of the IRM area. NAPL

- recovery from wells EB51, EB52, EB56, EB59, EB62, EB65, EB66R, EB69 and P7MW2 was less than 5 gallons per month per well.
- (4) In 1Q97, 1.4 million gallons of total fluids were recovered from well Sherry 3. Fluids recovered by well Sherry 3 are discharged to the East Side Treatment Plant.

3.0 PIER 6 IRM

Quarterly measurements of depth to water and floating NAPL were obtained by Exxon at the Pier 6 IRM during low tide on January 22, 1997 and during high tide on January 13, 1997. Ground water elevations were calculated and corrected by DRAI for the presence of floating NAPL, when necessary (Tables IV and V). Corrected ground water elevation contours and apparent NAPL thicknesses are presented in Figures 3 and 4. Contour map reporting forms are included in Appendix A.

The following observations are based upon the fluid level measurements and the ground water elevation contour map.

- (1) In general, the ground water flow direction is towards New York Bay and is consistent with historic measurements. At high tide, a reversal in the hydraulic gradient is indicated near the bulkhead (Figure 4).
- (2) Floating NAPL was detected in four of the 13 wells during both low and high tide. During low tide, the apparent NAPL thicknesses ranged from 0.08 (well EBR12) to 0.23 feet (well EB72). During high tide apparent NAPL thicknesses ranged 0.08 (well EB74) to 0.42 feet (well EB72).

The NAPL thicknesses and locations were generally consistent with ranges from historic measurements. NAPL thickness at well EBR13 was less than the historic maximum measured in the previous quarter.

4.0 HELIPAD IRM

Quarterly measurements of depth to water and floating NAPL were obtained by Exxon at the Helipad IRM during low tide on January 20, 1997 and during high tide on January 14, 1997. Ground water elevations were calculated and corrected by DRAI for the presence of floating NAPL, when necessary (Tables VI and VII). Corrected ground water elevation contours and apparent NAPL thicknesses are presented in Figure 5 for low tide and Figure 6 for high tide. Contour map reporting forms are included in Appendix A.

The following observations are based upon the fluid level measurements and the ground water elevation contour map.

- In general, the ground water flow direction is towards the Kill Van Kull and is consistent with historic measurements. At high tide, a reversal in the hydraulic gradient is indicated near the bulkhead (Figure 6).
- (2) Floating NAPL was detected in 11 of the 15 wells during low tide and 10 of the 15 wells at high tide. The apparent NAPL thicknesses during low tide ranged from 0.01 foot (wells EB7 and EBR2) to 2.22 feet (well EBR5). The apparent NAPL thickness during high tide ranged from 0.01 (well EB7, EB11 and EB12) to 2.55 feet (well EBR5). NAPL was thickest (greater than 0.80 foot) in the center of the site at wells EBR4, EBR5, EBR6 and EBR8 during both low and high tides.

In general, NAPL thicknesses and locations were consistent with historic ranges. NAPL thicknesses at wells EBR4, EBR5 and EBR6 were less than the historic maximums measured in the previous quarter. The NAPL thickness at well EB12 decreased from 3.22 feet at low tide and 3.55 feet at high tide measured in the previous quarter to 0.05 feet at low tide and 0.01 feet at high tide this quarter.

5.0 INTERCEPTOR TRENCH IRM

Quarterly measurements of depth to water and floating NAPL were obtained by Exxon at the Interceptor Trench area in select wells, manholes and sumps on January 24, 1997. Exxon also made visual inspections of the vitrified tile pipe (the drainage pipe within the Interceptor Trench) while fluid levels were measured at each manhole location. All water level elevations were calculated and corrected by DRAI for the presence of floating NAPL, when necessary (Table VIII). Corrected ground water elevation contours and apparent NAPL thicknesses are presented in Figure 7. A contour map reporting form is included in Appendix A.

Daily flow meter readings (excluding weekends and holidays) were collected by Exxon from the flow meters at Sump A, Sump B and the Avenue J Sump. Monthly total fluid volumes recovered by the trench system (Sump A, Sump B and Avenue J Sump) are summarized in Table IX. Daily totalizer readings and volume of fluids pumped are summarized in Appendix C. As recommended in the previous quarterly report, weekly NAPL recovery was initiated at well ITMW1 using a vacuum truck. Recovered NAPL volumes for well ITMW1 are tabulated and graphically presented in Appendix E.

The following observations are based upon the fluid level measurements, the ground water elevation contour map and fluid pumping rates.

- (1) Ground water northeast and southwest of the trench flows toward the interceptor trench. This is consistent with previous measurements. Ground water elevations are lower in the vicinity of Sump A and B from the previous quarter since Sump A is back in service.
- (2) Floating NAPL was detected in 19 of the 26 wells. The apparent NAPL thicknesses ranged from 0.01 feet (wells EB35 and ITMW6) to 9.13 feet (well ITMW1). Apparent NAPL thicknesses, greater than or equal to 0.5 foot, were detected in wells EB100, ITMW1, ITMW2, ITMW3 and ITMW4. NAPL thicknesses and locations are generally consistent with historic ranges found in the monitoring wells, except at wells EB35, EB95 and GMMW11. The NAPL thicknesses measured at wells EB95 (0.12 foot) and GMMW11 (0.02 feet) were slightly greater than maximum thicknesses previously measured (0.09 and 0.01 feet, respectively). NAPL thickness of 0.01 foot was measured at well EB35 where NAPL was not previously detected. NAPL thickness at well ITMW1 was less than the historic maximum measured in the previous quarter.

DNAPL was measured in ITMW6 at a thickness of 2.03 feet which is the same thickness as measured on November 18, 1996. DNAPL was not detected in any of the other Bayonne Plant wells.

- (3) In 1Q97, a total of 6.3 million gallons of total fluids were recovered using Sump A, Sump B and the Avenue J Sump (Table IX). Fluids recovered by the trench system were discharged to the East Side Treatment Plant. Sump B was used when Sump A was temporarily out of service. Sump B uses the same discharge pipe and totalizer as Sump A. The float on/off switch for Sump B is set for a higher fluid elevation than Sump A.
- (4) Fluid level measurements within the manholes indicate that fluid flow within the V.T.P. drainage pipe is towards Sump A. Based on fluid level measurements at Manholes MH-1, MH-6, MH-7 and MH-9, the average hydraulic gradient within the drainage pipe is less than 0.01ft/ft.
- (5) A visual inspection of the V.T.P. drainage pipe at all nine manholes revealed no obvious blockage of fluid flow within the trench.
- (6) Approximately 75 gallons of NAPL were recovered from weekly vacuum truck operations at well ITMW1.

6.0 PLATTY KILL CANAL IRM

Quarterly measurements of depth to water and NAPL were obtained by Exxon at the Platty Kill Canal IRM during low tide on January 20, 1997 and during high tide on January 14, 1997. Ground water elevations were calculated and corrected by DRAI for the presence of floating NAPL, when necessary (Tables X and XI). Corrected ground water elevation contours are presented for the shallow unconfined zone at low tide in Figure 8 and at high tide in Figure 9, and for the deep confined zone at low tide in Figure 10 and at high tide in Figure 11. Contour map reporting forms are included in Appendix A.

NAPL recovery operations, overseen by Exxon, are performed at two unconfined zone wells (EB-19 and GMMW12) and three confined zone wells (PKMW11, PKMW12 and PKMW14). NAPL is currently recovered twice-weekly by the vacuum truck and dedicated PVC pipe at these five wells. As recommended in the previous quarterly report, NAPL recovery was initiated at well GMMW12. NAPL volumes recovered from all the wells are summarized in Table XII. NAPL volumes are tabulated and graphically presented in Appendix D.

The following observations are based upon the fluid level measurements, the ground water elevation contour map and NAPL recovery operations.

- (1) In general, at both low and high tide, the ground water flow in the shallow unconfined zone is towards the Platty Kill Canal. At high tide, a reversal in the hydraulic gradient is indicated near the bulkhead. This is consistent with historic measurements.
- (2) Ground water flow in the deep confined zone is towards the Platty Kill Canal at low tide. At high tide, a reversal in the hydraulic gradient is indicated near the bulkhead. This is consistent with historic measurements.
- (3) Floating NAPL was detected in six (PKMW1, PKMW3, PKMW4, PKMW8, GMMW-12 and EB-19) of the 11 unconfined zone wells at low tide. Floating NAPL was detected in five (PKMW1, PKMW3, PKMW8, GMMW-12 and EB-19) of the 11 unconfined wells measured at high tide. The apparent NAPL thicknesses ranged from 0.02 foot in well GMMW12 to 1.52 feet in EB-19 at low tide. At high tide, the NAPL thicknesses ranged from 0.01 foot (well PKMW3) to 1.36 feet (EB19). Measured NAPL thicknesses were typically greater at low tide than at high tide. NAPL thicknesses and locations are generally consistent with historic ranges found in the monitoring wells, except at well GMMW12. During NAPL recovery operations on January 7, 1997, a NAPL thickness of 2.42 feet was measured at GMMW12 which is greater than the previous historic maximum of 2.35 feet. However, the NAPL thicknesses at this well on January 14 and 20, 1997 were lower (0.02 foot on both days) due to successful NAPL recovery operations.

- (4) Floating NAPL was detected in three wells (PKMW11, PKMW12 and PKMW14) of the seven deep confined zone wells at both high and low tides. During low tide, NAPL thicknesses ranged from 0.07 feet at PKMW14 to 9.46 feet at PKMW11. During high tide, NAPL thicknesses ranged from 0.51 feet at PKMW14 to 9.03 feet at PKMW11.
- (5) During 1Q97, approximately 165 gallons of NAPL were recovered. Approximately 141 gallons were recovered from well PKMW11. NAPL recovery was consistent with historic recovery at wells EB19, PKMW11, PKMW12 and PKMW14. Recovery from well GMMW12 dropped to less than 0.10 gallons per month. A total of 2 gallons of NAPL were recovered from well GMMW-12. Approximately 1.6 gallons of NAPL were initially recovered.

7.0 LOW SULFUR AND SOLVENT TANK FIELD IRM

It is anticipated that the VER system will be operated during 2Q97. In March 1997, 10 pneumatic total fluids pumps were installed in recovery wells VER1A through VER1E and VER2A through VER2E.

8.0 RECOMMENDATIONS

The following recommendations are based on observations made during the ongoing NAPL monitoring and recovery operations. Recommendations for NAPL recovery are based on the potential threat for off-site NAPL migration. In areas where off-site NAPL migration is not occurring, or is not evident, recommendations typically only involve on-going monitoring. The exception is the Platty Kill Canal IRM, where NAPL recovery is being performed to reduce the thickness of NAPL.

Pier 7 IRM

- Ground water and NAPL level monitoring should be continued on a quarterly basis.
- (2) NAPL recovery by vacuum truck should be continued at the following 12 wells: EB51, EB52, EB56, EB58, EB59, EB62, EB65, EB66R, EB67, EB69, P7MW1 and P7MW2.
- (3) Total fluids recovery should continue at wells EBR11 and Sherry 3.

Pier 6 IRM

Ground water and NAPL level monitoring should be continued on a quarterly basis.

Helipad IRM

Ground water and NAPL level monitoring should be continued on a quarterly basis.

Interceptor Trench IRM

- Ground water and NAPL level monitoring should be continued on a quarterly basis.
- (2) Total fluids recovery should continue at Sump A and Avenue J Sump.
- (3) Vacuum truck NAPL recovery at well ITMW1 should increase to twice weekly.
- (4) The DNAPL at ITMW6 should be sampled and tested to determine its' chemical composition.

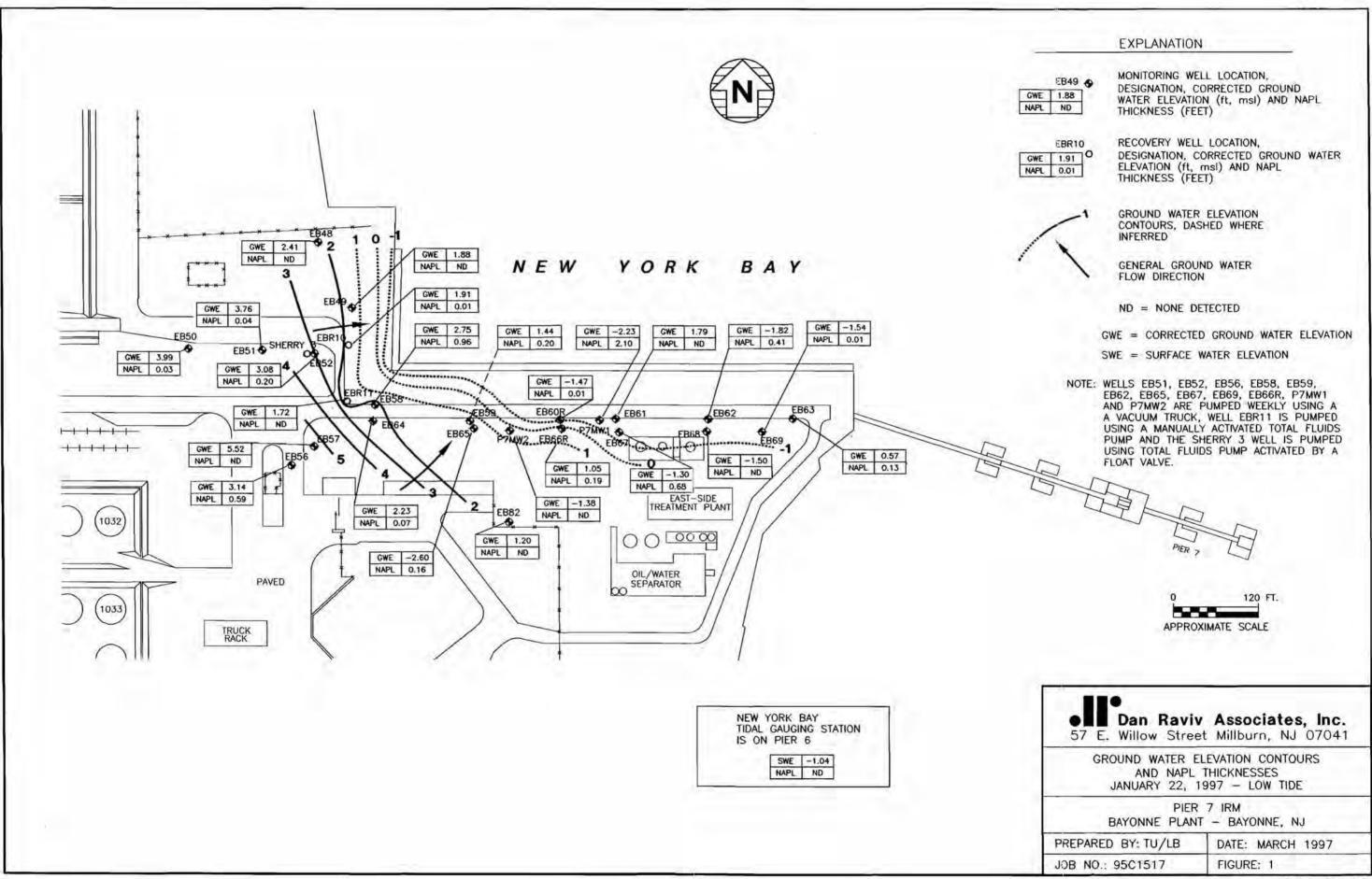
Platty Kill Canal IRM

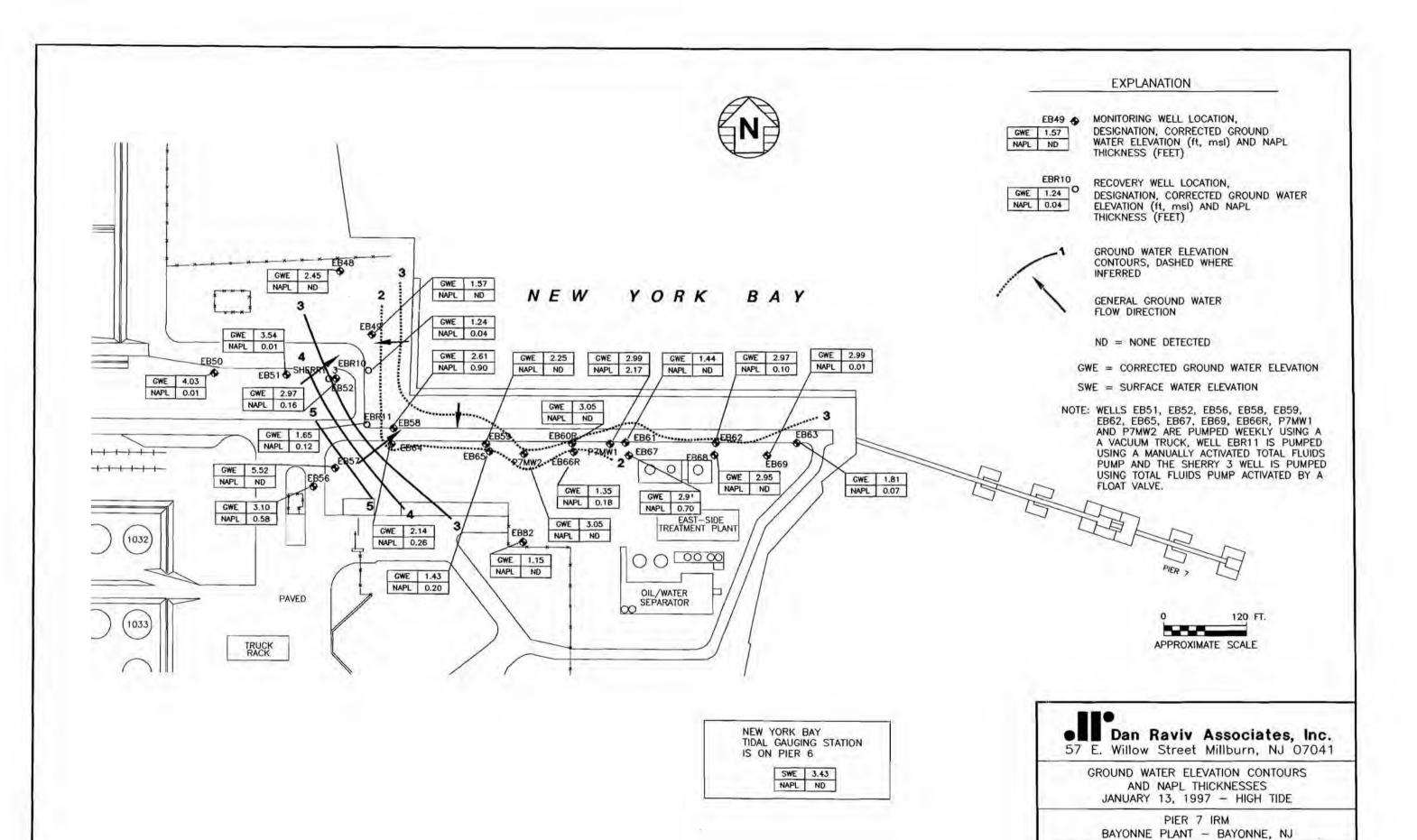
- Ground water and NAPL level monitoring should be continued on a quarterly basis.
- (2) NAPL recovery operations should be continued at wells EB19, GMMW-12, PKMW11, PKMW12 and PKMW14.

Miscellaneous

 The Bayonne Free Oil Recovery Project (FORP) will commence 2Q97. IRM monitoring and NAPL recovery operations will continue until full scale remedial systems are installed.

FIGURES





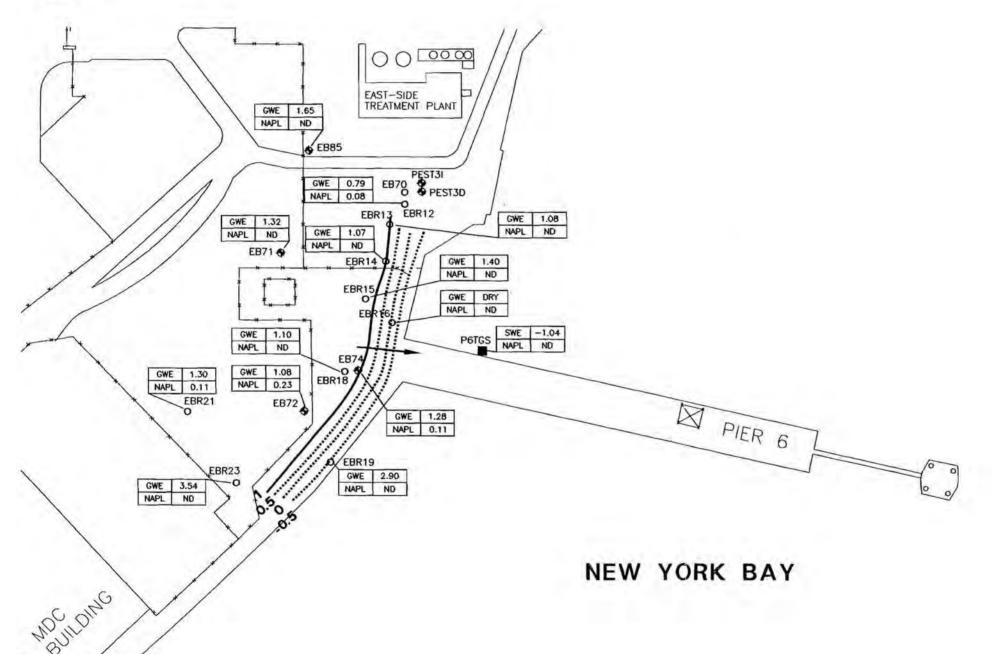
DATE: MARCH 1997

FIGURE: 2

PREPARED BY: TU/LB

JOB NO.: 95C1517





EXPLANATION

EB71 **⊕**GWE 1.32

NAPL ND

MONITORING WELL LOCATION, DESIGNATION, CORRECTED GROUND WATER ELEVATION (ft. msl) AND NAPL THICKNESS (FEET)

GWE 1.10 O NAPL ND RECOVERY WELL LOCATION,
DESIGNATION, CORRECTED GROUND WATER
ELEVATION (ft. msl) AND NAPL
THICKNESS (FEET)

SWE -1.04 NAPL ND NEW YORK BAY
TIDAL GAUGING STATION
DESIGNATION, SURFACE WATER
ELEVATION (ft,msl) AND NAPL
THICKNESS (FEET)



GROUND WATER ELEVATION CONTOURS, DASHED WHERE INFERRED

GENERAL GROUND WATER FLOW DIRECTION

ND = NONE DETECTED

GWE = CORRECTED GROUND WATER ELEVATION

SWE = SURFACE WATER ELEVATION





GROUND WATER ELEVATION CONTOURS AND NAPL THICKNESSES JANUARY 22, 1997 - LOW TIDE

PIER 6 IRM BAYONNE PLANT — BAYONNE, NJ

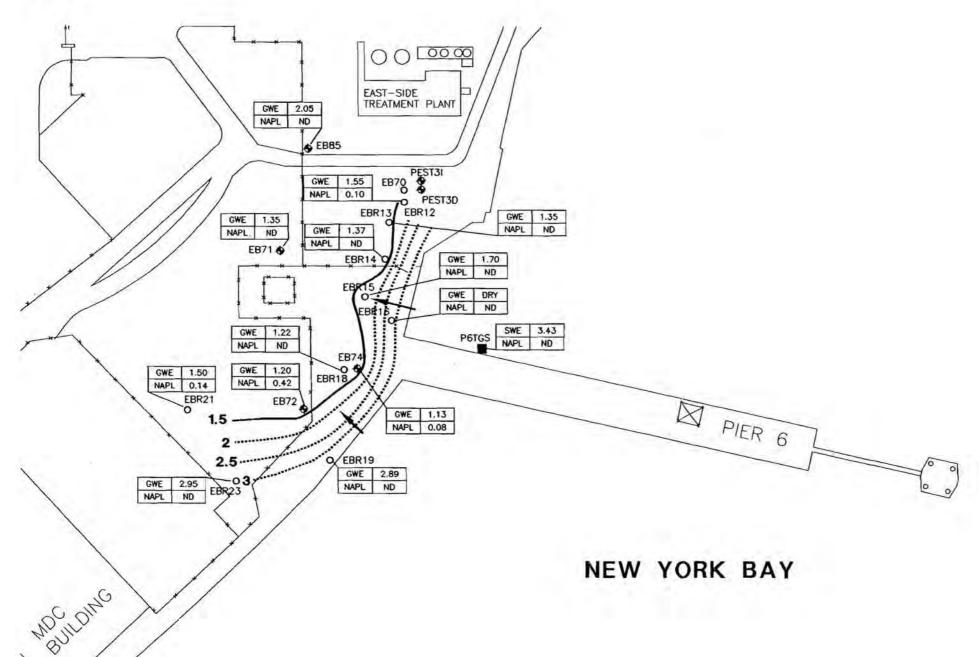
PREPARED BY: TU/LB

JOB NO.: 95C1517

DATE: MARCH 1997

FIGURE: 3





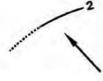
EXPLANATION

EB71 **♦**GWE 1.35
NAPL ND

MONITORING WELL LOCATION, DESIGNATION, CORRECTED GROUND WATER ELEVATION (ft. msl) AND NAPL THICKNESS (FEET)

GWE 1.22 NAPL ND RECOVERY WELL LOCATION,
DESIGNATION, CORRECTED GROUND WATER
ELEVATION (ft. msl) AND NAPL
THICKNESS (FEET)

P6TGS SWE 3.43 NAPL ND NEW YORK BAY
TIDAL GAUGING STATION
DESIGNATION, SURFACE WATER
ELEVATION (ft,msi) AND NAPL
THICKNESS (FEET)



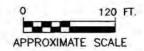
GROUND WATER ELEVATION CONTOURS, DASHED WHERE INFERRED

GENERAL GROUND WATER FLOW DIRECTION

ND = NONE DETECTED

GWE = CORRECTED GROUND WATER ELEVATION

SWE = SURFACE WATER ELEVATION





GROUND WATER ELEVATION CONTOURS AND NAPL THICKNESSES JANUARY 13, 1997 - HIGH TIDE

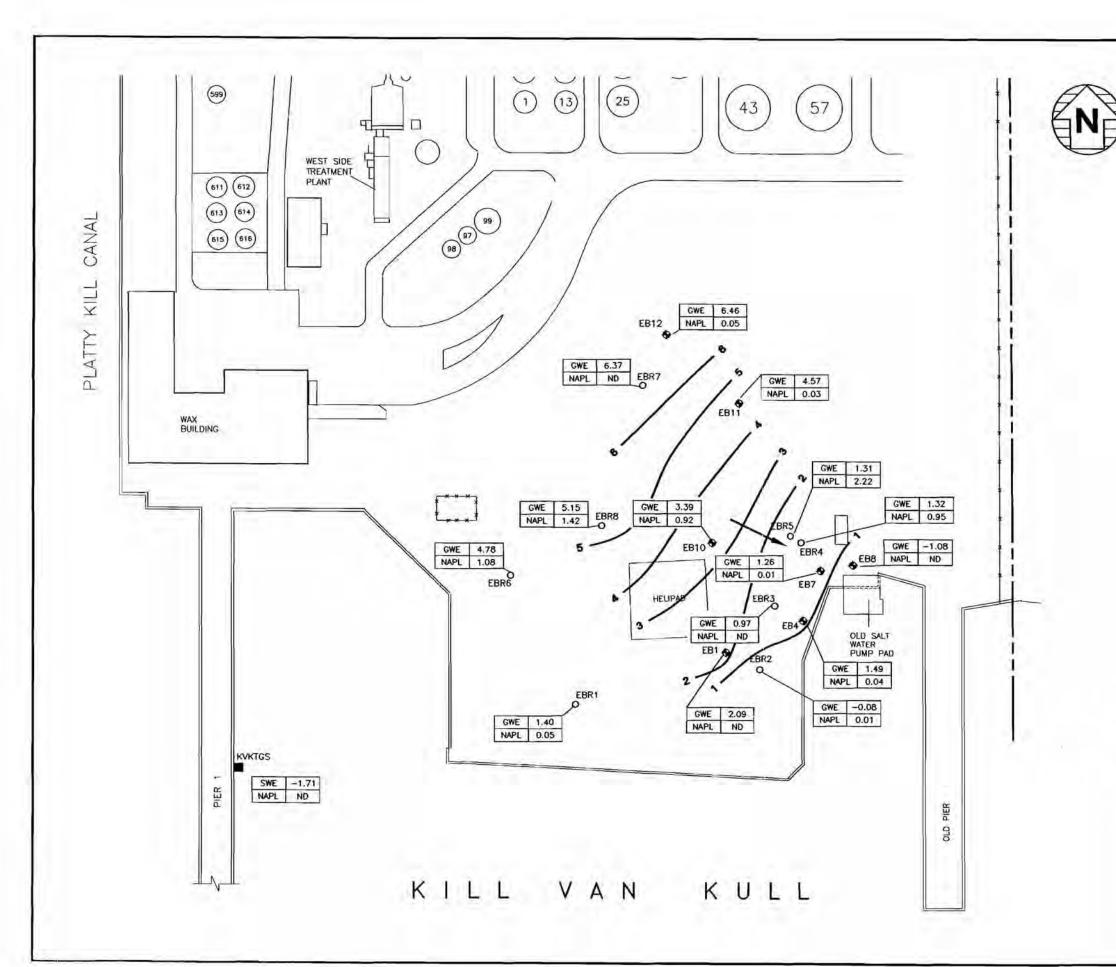
PIER 6 IRM BAYONNE PLANT — BAYONNE, NJ

PREPARED BY: TU/LB

DATE: MARCH 1997

JOB NO.: 95C1517

FIGURE: 4





EXPLANATION

EB1 & GWE 2.09 NAPL ND

MONITORING WELL LOCATION, DESIGNATION, CORRECTED GROUND WATER ELEVATION (ft, msi) AND NAPL THICKNESS (FEET)

EBR1 GWE 1.40 O NAPL 0.05

RECOVERY WELL LOCATION, DESIGNATION, CORRECTED GROUND WATER ELEVATION (ft, msl) AND NAPL THICKNESS (FEET)

KVKTGS SWE |-1.71 NAPL ND

KILL VAN KULL TIDAL GAUGING STATION DESIGNATION, SURFACE WATER ELEVATION (ft, msl) AND NAPL THICKNESS (FEET)



GROUND WATER ELEVATION CONTOURS, DASHED WHERE INFERRED

GENERAL GROUND WATER FLOW DIRECTION

ND = NONE DETECTED

GWE = CORRECTED GROUND WATER ELEVATION

SWE = SURFACE WATER ELEVATION

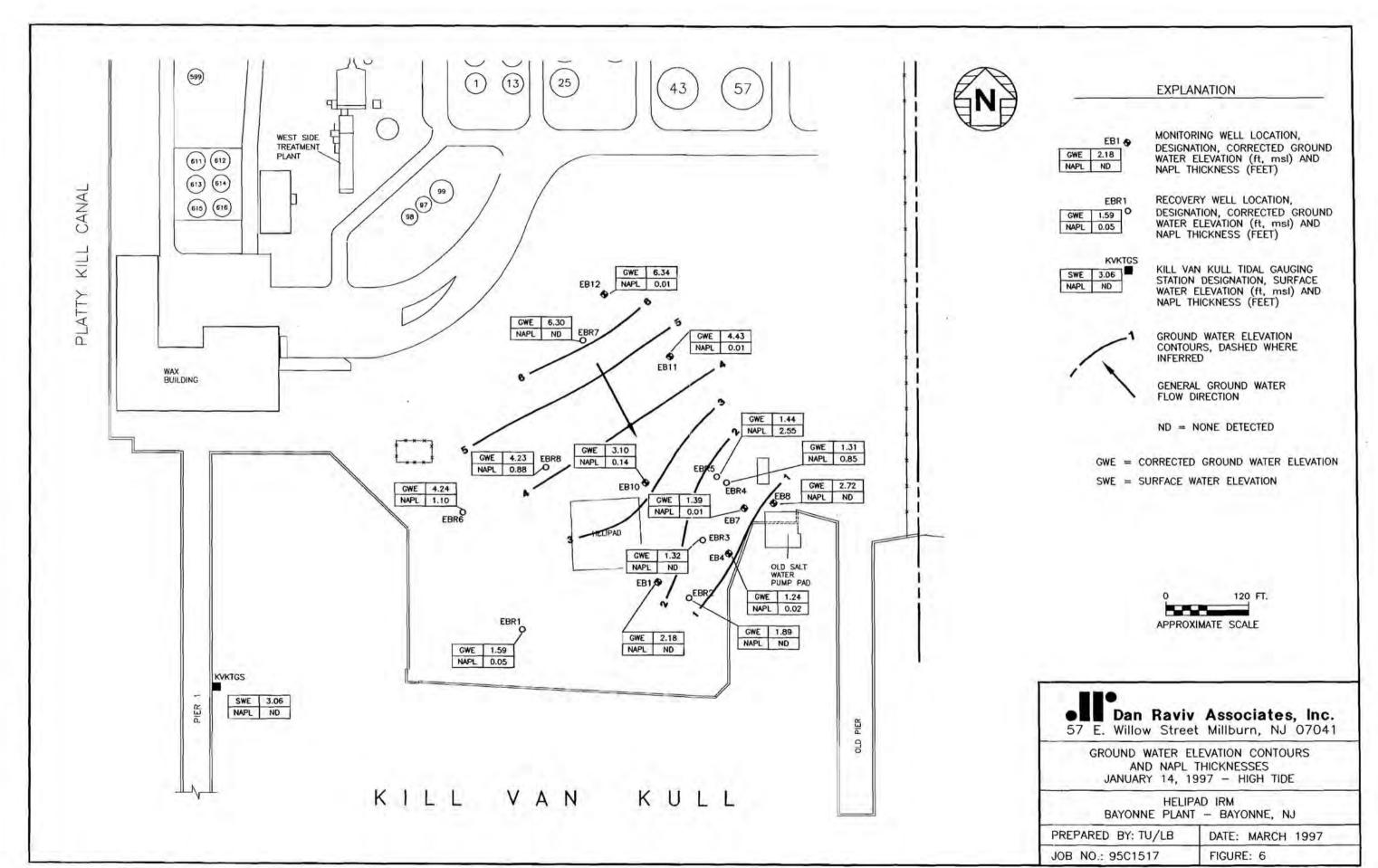


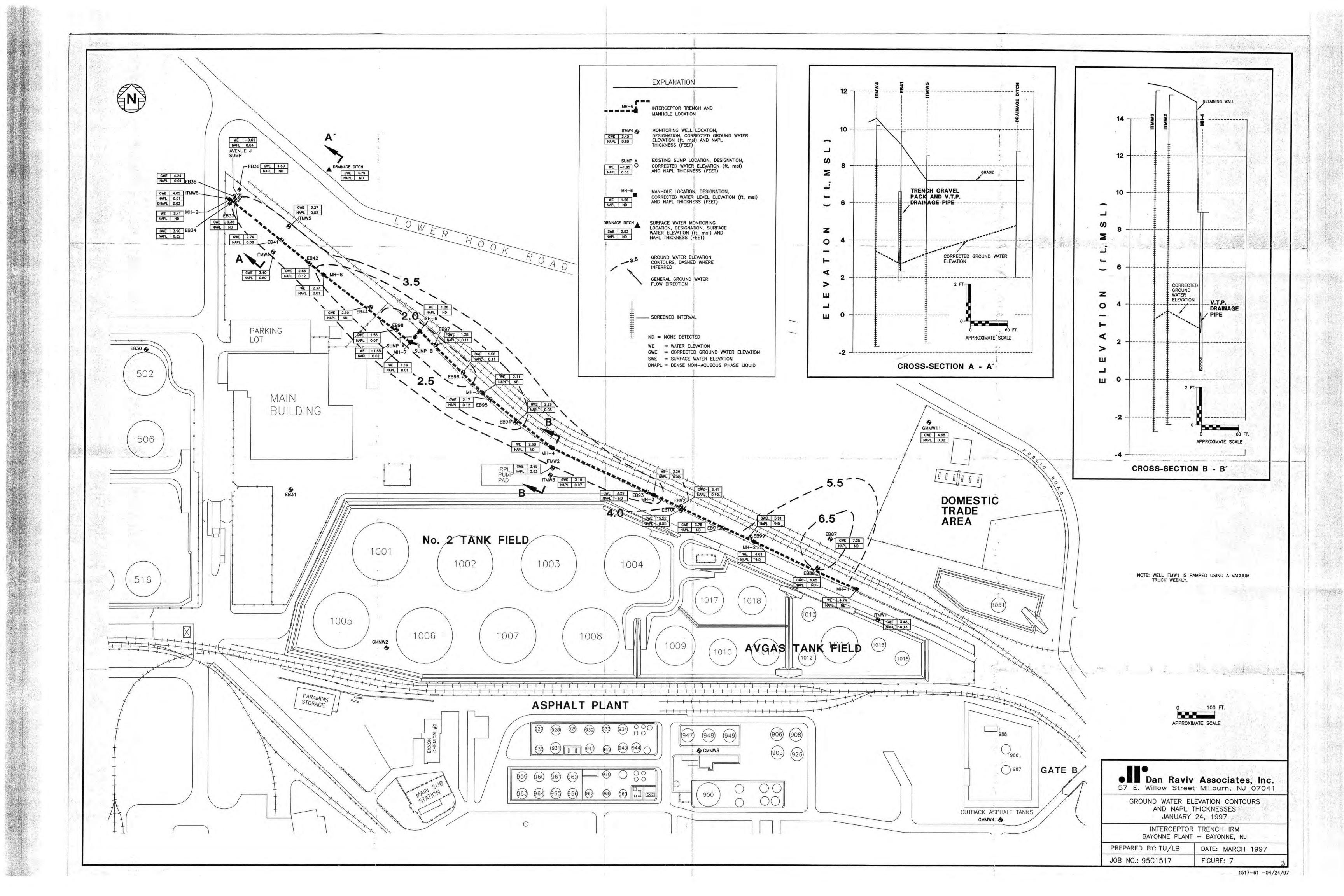
Dan Raviv Associates, Inc. 57 E. Willow Street Millburn, NJ 07041

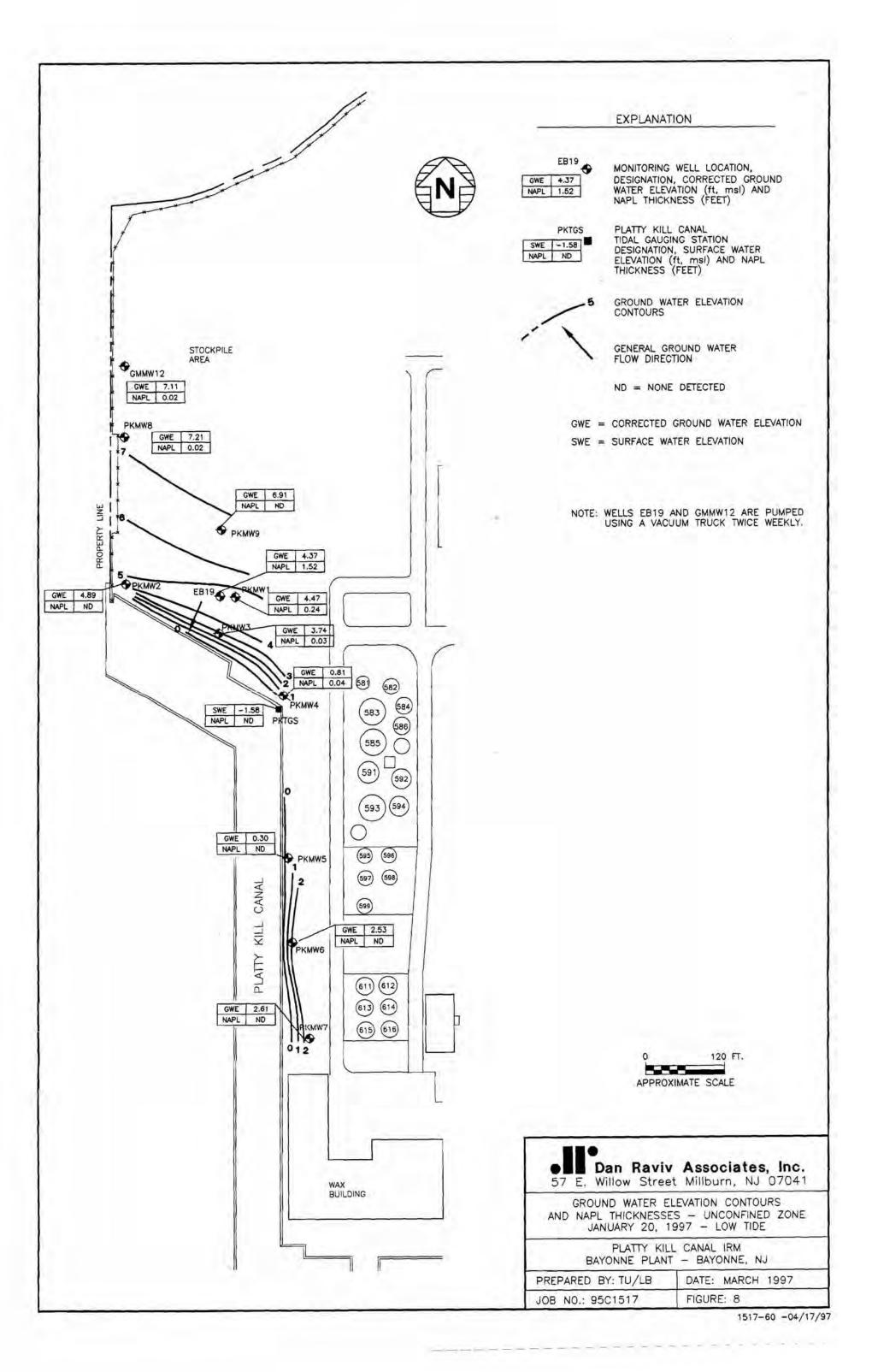
GROUND WATER ELEVATION CONTOURS AND NAPL THICKNESSES JANUARY 20, 1997 - LOW TIDE

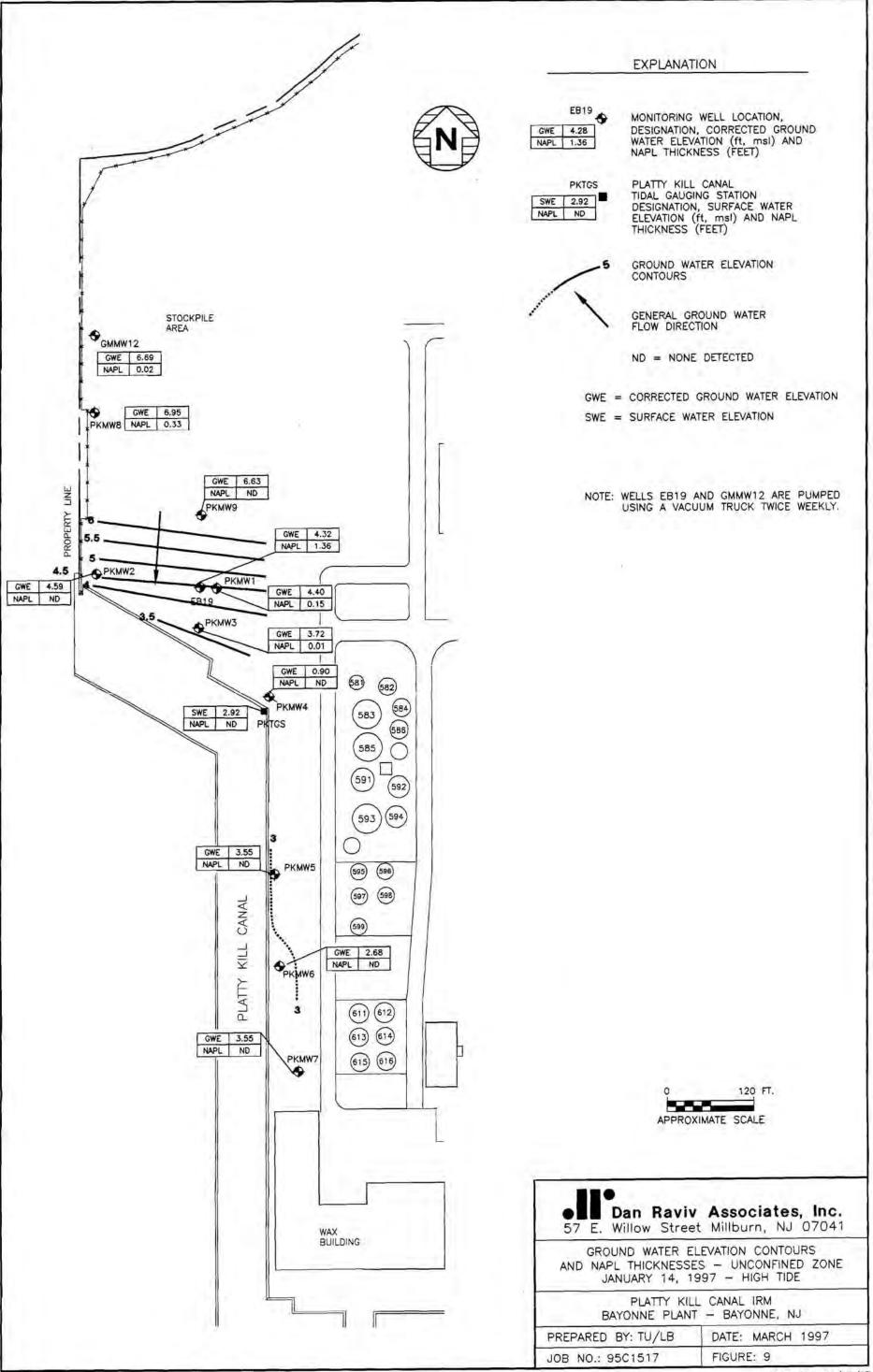
HELIPAD IRM BAYONNE PLANT - BAYONNE, NJ

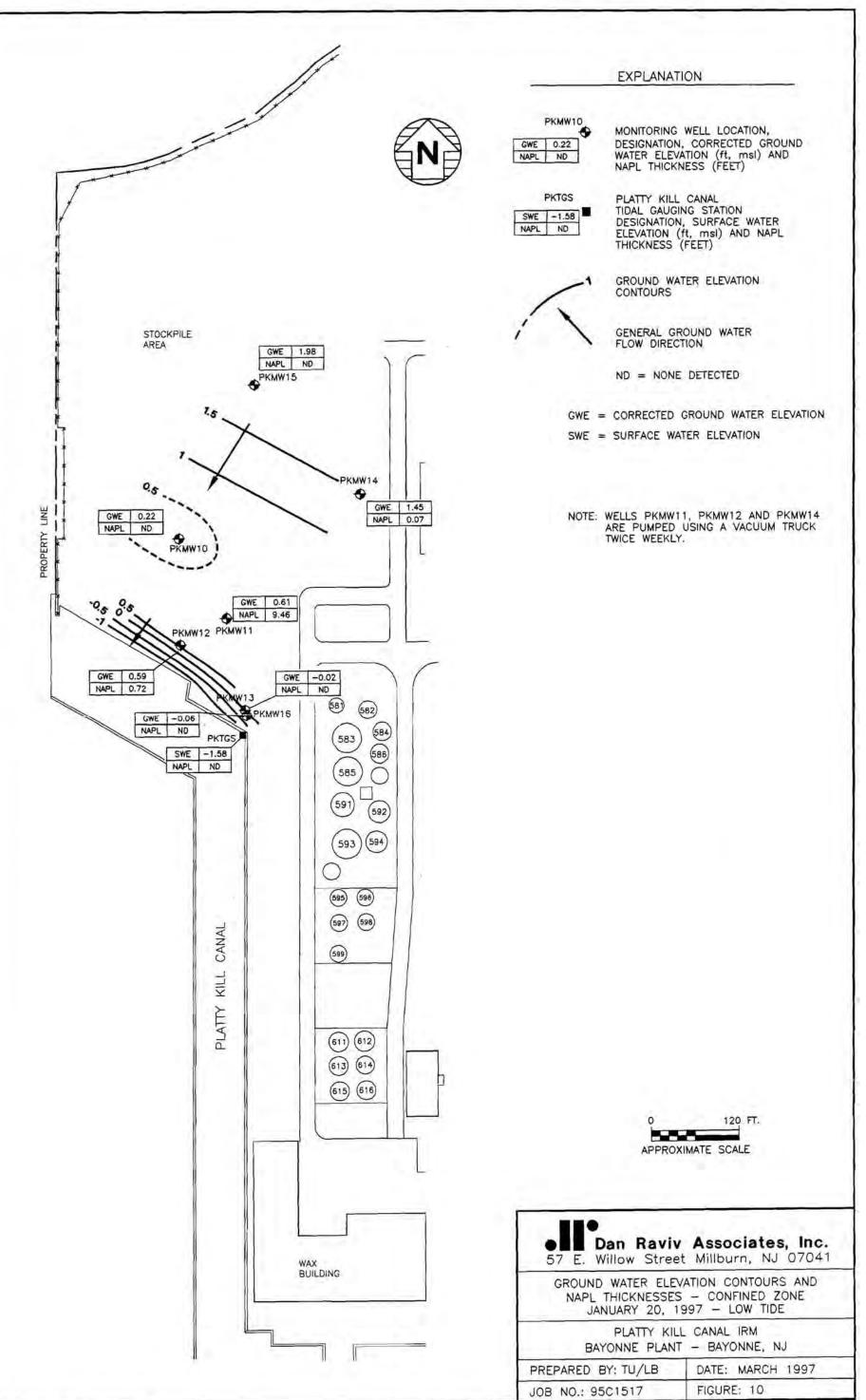
PREPARED BY: TU/LB DATE: MARCH 1997 JOB NO.: 95C1517 FIGURE: 5

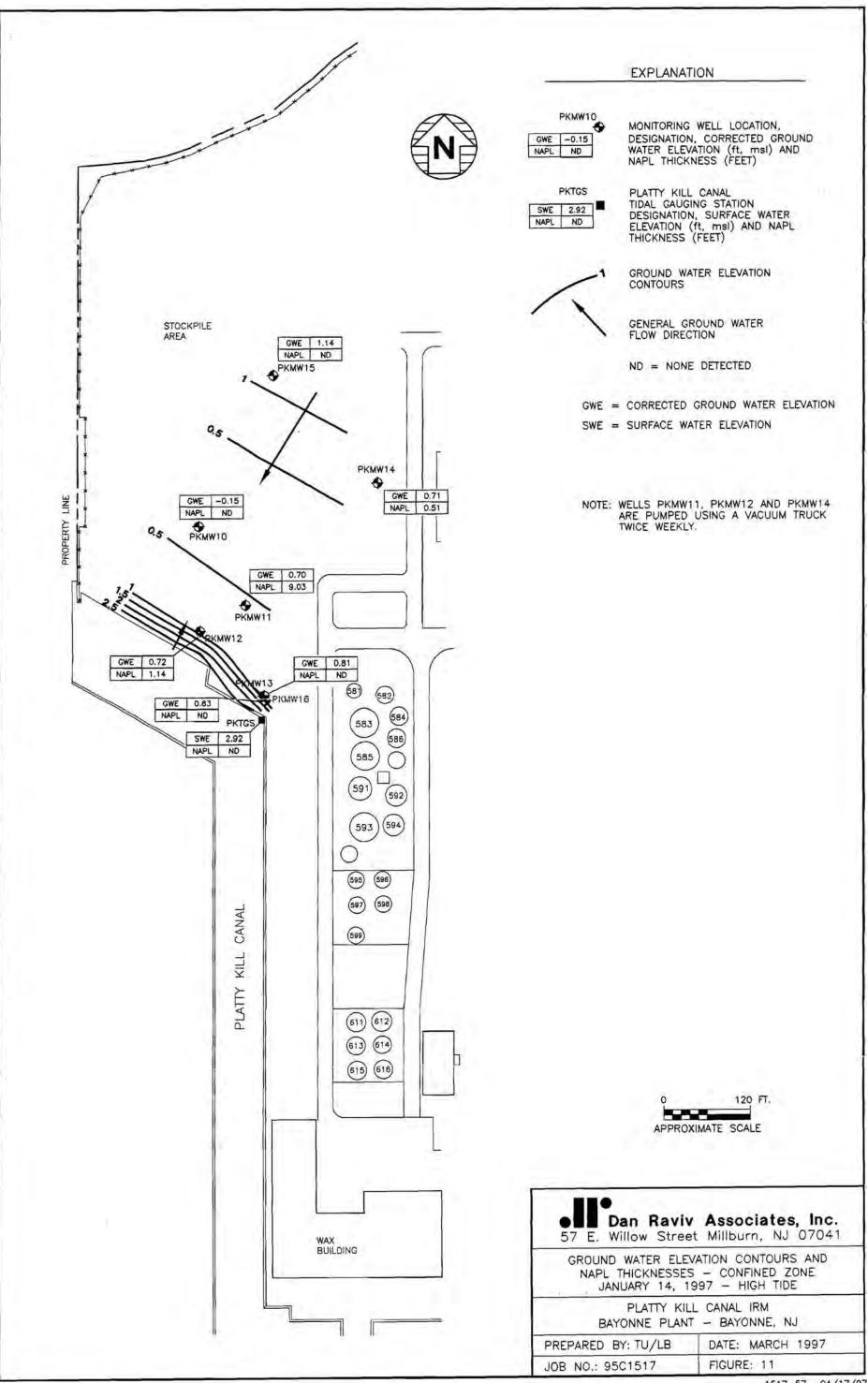












TABLES

Table I Summary of Ground Water Elevations and NAPL Thicknesses Low Tide -- January 22, 1997 Pler 7 IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB48	12:49	9.06	ND	6.65	ND	2.41	ND	2.41
EB49	12:48	10.62	ND	8.74	ND	1.88	ND	1.88
EB50	12:51	10.91	6.92	6.95	3.99	3,96	0.03	3.99
EB51	12:53	10.21	6.45	6.49	3.76	3.72	0.04	3.76
EB52	12:55	10.53	7.43	7.63	3.10	2.90	0.20	3.08
EB56	13:01	9.16	5,95	6.54	3.21	2.62	0.59	3.14
EB57	13:03	12.51	ND	6.99	ND	5.52	ND	5.52
EB58	13:07	8.94	6.07	7.03	2.87	1.91	0.96	2.75
EB59	13:09	11.72	10.26	10.46	1.46	1,26	0.20	1.44
EB60R	13:17	11.37	12.84	12.85	-1.47	-1.48	0.01	-1,47
EB61	13:19	11.69	ND	9.90	ND	1.79	ND	1.79
EB62	13:16	12.41	14.18	14.59	-1.77	-2.18	0.41	-1.82
EB63	13:14	10.96	10.37	10.50	0.59	0.46	0.13	0.57
EB64	13:05	9.25	7.01	7.08	2.24	2.17	0.07	2.23
EB65	13:11	11.03	13.61	13.77	-2.58	-2.74	0.16	-2.60
EB66R	13:15	11.98	10.91	11.10	1.07	0.88	0.19	1.05
EB67	13:08	12.05	13.27	13.95	-1.22	-1.90	0.68	-1.30
EB68	13:11	12.73	ND	14.23	ND	-1.50	ND	-1.50
EB69	13:13	12.66	14.20	14.21	-1.54	-1.55	0.01	-1.54
EB82	13:07	10.70	ND	9.50	ND	1.20	ND	1,20
EBR10	12:57	9.30	7.39	7.40	1.91	1.90	0.01	1.91
EBR11	12:59	9.24	ND	7.52	ND	1.72	ND	1.72
P7MW1	13:20	10.84	12.82	14.92	-1.98	-4.08	2.10	-2.23
P7MW2	13:13	12.88	ND	14.26	ND	-1.38	ND	-1,38
P6TGS	12:59	11.61	ND	12.65	ND	-1.04	ND	-1.04

- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) P6TGS = Pier 6 Tidal Gauging Station.

Table II Summary of Ground Water Elevations and NAPL Thicknesses High Tide -- January 13, 1997 Pier 7 IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB48	10:40	9.06	ND	6.61	ND	2.45	ND	2.45
EB49	10:38	10.62	ND	9.05	ND	1.57	ND	1.57
EB50	10:42	10,91	6.88	6.89	4.03	4.02	0.01	4.03
EB51	10:43	10.21	6.67	6,68	3,54	3,53	0.01	3.54
EB52	10:45	10.53	7.54	7,70	2.99	2.83	0.16	2,97
EB56	10:55	9.16	5.99	6.57	3.17	2.59	0.58	3.10
EB57	11:00	12.51	ND	6.99	ND	5.52	ND	5.52
EB58	11:05	8.94	6.23	7.13	2.71	1.81	0.90	2.61
EB59	11:07	11.72	ND	9.47	ND	2.25	ND	2,25
EB60R	11:14	11.37	ND	8.32	ND	3.05	ND	3.05
EB61	11:17	11.69	ND	10.25	ND	1.44	ND	1.44
EB62	11:14	12.41	9,43	9,53	2.98	2.88	0.10	2.97
EB63	11:11	10.96	9.14	9.21	1.82	1.75	0.07	1.81
EB64	11:03	9.25	7.08	7.34	2.17	1.91	0.26	2.14
EB65	11:19	11.03	9.58	9.78	1.45	1.25	0.20	1.43
EB66R	11:13	11.98	10.60	10.78	1.38	1.20	0.18	1.35
EB67	11:06	12.05	9.04	9.74	3.01	2.31	0.70	2.91
EB68	11:07	12.73	ND	9.78	ND	2.95	ND	2.95
EB69	11:09	12.66	9.67	9.68	2.99	2,98	0.01	2.99
EB82	11:04	10.70	ND	9,55	ND	1.15	ND	1.15
EBR10	10:47	9.30	8.06	8.10	1.24	1.20	0.04	1.24
EBR11	10:49	9.24	7.58	7.70	1.66	1.54	0.12	1.65
P7MW1	11:15	10.84	7.59	9.76	3.25	1.08	2.17	2.99
P7MW2	11:11	12.88	ND	9.83	ND	3.05	ND	3.05
P6TGS	10:53	11.61	ND	8.18	ND	3.43	ND	3.43

- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) P6TGS = Pier 6 Tidal Gauging Station.

Table III Summary of NAPL and Total Fluids Recovery Pier 7 IRM

Bayonne Plant - Bayonne, New Jersey

NAPL RECOVERY (GALLONS)

WELL NO.	EB51	EB52	E856	EB58	EB59	EB62	EB65	EB66R	E867	EB69	P7MW1	P7MW2	Total Volume
JANUARY	0.07	0.39	1.59	2.35	0.84	0.75	1,96	1.34	1.24	0.19	9.99	0.03	20.74
FEBRUARY	0.25	0.45	0.94	3.59	0.53	1.96	0.78	0.34	3.89	0.57	15.85	0.11	29.26
MARCH	0.12	0.17	0.63	1.75	0.19	2.24	0.61	0.17	4.31	0.54	17.54	0.06	28.33
FIRST QUARTER of 1997	0.44	1.01	3.16	7.69	1.56	4.95	3.35	1.85	9.44	1.30	43,38	0.20	78.33
TOTAL VOLUME OF NAPL PREVIOUSLY RECOVERED	0.00	9.49	0.00	62.55	0.00	45.44	0.00	0.00	101.95	30.33	288.69	86.95	610.37
TOTAL VOLUME OF NAPL RECOVERED BEGINNING IN 4Q95	0.44	10.50	3.16	70.24	1.56	50.39	3,35	1.85	111.39	31.63	332.07	87.15	688.70

SHERRY 3 - TOTAL FLUIDS RECOVERY

		TOTAL VOLUME (GAL)	DOWN TIME (HOURS)	AVERAGE PUMP RATE (GPM)
Ji	ANUARY	473,442	4.5	10.7
FEE	BRUARY	482,326	21	11.5
	MARCH	421,551	0	9.4
FIRST QUARTER	of 1997	1,377,319	25.5	10.5

Note: (1) All measurements performed by Exxon.

(2) Total volume of NAPL previously recovered has been adjusted for rounding differences used in previous quarters

Table IV
Summary of Ground Water Elevations and NAPL Thicknesses
Low Tide – January 22, 1997
Pier 6 IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB71	13:05	12.15	ND	10.83	ND	1.32	ND	1.32
EB72	12:54	12.27	11.16	11.39	1.11	0.88	0.23	1.08
EB74	12:50	12.01	10.71	10.82	1.30	1.19	0.11	1.28
EB85	13:03	9.81	ND	8.16	ND	1.65	ND	1,65
EBR12	13:02	10.04	9.24	9,32	0.80	0.72	0.08	0.79
EBR13	13:02	10.06	ND	8.98	ND	1.08	ND	1.08
EBR14	13:00	10.05	ND	8.98	ND	1.07	ND	1.07
EBR15	12:56	9.52	ND	8.12	ND	1.40	ND	1.40
EBR16	12:58	10.29	ND	DRY	ND	NA	ND.	NA
EBR18	12:52	11.44	ND	10.34	ND	1.10	ND	1.10
EBR19	12:48	9.54	ND	6.64	ND	2.90	ND	2.90
EBR21	12:44	10.12	8.80	8.91	1.32	1.21	0.11	1.30
EBR23	12:47	10.10	ND	6.56	ND	3.54	ND	3.54
P6TGS	12:59	11,61	ND	12.65	ND	-1.04	ND	-1.04

- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) P6TGS = Pier 6 Tidal Gauging Station.

Table V
Summary of Ground Water Elevations and NAPL Thicknesses
High Tide -- January 13, 1997
Pier 6 IRM

11:02	12.15		(feet)	(ft, msl)	(ft, msl)	Thickness (feet)	Elevation (feet)
10:48		ND	10.80	ND	1.35	ND	1.35
	12.27	11.01	11.43	1.26	0.84	0.42	1.20
10:45	12.01	10.87	10.95	1.14	1.06	0.08	1.13
11:00	9.81	ND	7.76	ND	2.05	ND	2.05
10:57	10.04	8,48	8.58	1.56	1.46	0.10	1.55
0:56	10.06	ND	8.71	ND	1.35	ND	1.35
10:55	10.05	ND	8.68	ND	1.37	ND	1.37
10:50	9,52	ND	7.82	ND	1.70	ND	1.70
10:52	10.29	ND	DRY	ND	NA	ND	NA
10:46	11.44	ND	10,22	ND	1.22	ND	1.22
10:43	9.54	ND	6.65	ND	2.89	ND	2.89
10:37	10.12	8.60	8.74	1.52	1.38	0.14	1.50
10:40	10.10	ND	7.15	ND	2.95	ND	2.95
10:53	11.61	ND	8.18	ND	3.43	ND	3,43
1 1 1 1 1 1	1:00 0:57 0:56 0:55 0:50 0:52 0:46 0:43 0:37	1:00 9.81	11:00	11:00	11:00	11:00	11:00

- (2) ND = Not Detected
- (3) NA = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) P6TGS = Pier 6 Tidal Gauging Station.

Table VI Summary of Ground Water Elevations and NAPL Thicknesses Low Tide -- January 20, 1997 Helipad IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB1	11:21	11.05	ND	8.96	ND	2.09	ND	2.09
EB4	11:17	10.89	9.40	9,44	1.49	1.45	0.04	1.49
EB7	11:12	10.96	9.70	9.71	1.26	1.25	0.01	1.26
EB8	11:10	7.82	ND	8,90	ND	-1.08	ND	-1.08
EB10	11:35	8.20	4.72	5.64	3.48	2.56	0.92	3.39
EB11	11:32	8.44	3.87	3.90	4.57	4.54	0.03	4.57
EB12	11:30	11.53	5.07	5.12	6.46	6.41	0.05	6,46
EBR1	11:23	13.83	12.43	12.48	1,40	1.35	0.05	1.40
EBR2	11:19	8.93	9.01	9.02	-0.08	-0.09	0.01	-0.08
EBR3	11:16	8.73	ND	7.76	ND	0.97	ND	0.97
EBR4	11:13	8.58	7.17	8.12	1.41	0.46	0.95	1.32
EBR5	11:14	8.60	7.07	9.29	1.53	-0.69	2.22	1.31
EBR6	11:24	10.38	5.49	6.57	4.89	3.81	1.08	4.78
EBR7	11:29	9.64	ND	3.27	ND	6.37	ND	6,37
EBR8	11:27	9,46	4.17	5.59	5.29	3.87	1.42	5.15
KVKTGS	11:40	9.91	ND	11.62	ND	-1.71	ND	-1.71
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- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) KVKTGS = Kill Van Kull Tidal Gauging Station (Pier 1).

Table VII
Summary of Ground Water Elevations and NAPL Thicknesses
High Tide -- January 14, 1997
Hellpad IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB1	11:36	11.05	ND	8.87	ND	2.18	ND	2.18
EB4	11:33	10.89	9.65	9.67	1.24	1.22	0.02	1.24
EB7	11:28	10.96	9.57	9.58	1.39	1.38	0.01	1.39
EB8	11:27	7.82	ND	5.10	ND	2.72	ND	2.72
EB10	11:52	8.20	5.09	5.23	3.11	2.97	0.14	3.10
EB11	11:50	8.44	4.01	4.02	4.43	4.42	0.01	4.43
EB12	11:48	11.53	5.19	5.20	6.34	6.33	0.01	6.34
EBR1	11:37	13.83	12.24	12.29	1.59	1.54	0.05	1.59
EBR2	11:35	8.93	ND	7.04	ND	1.89	ND	1.89
EBR3	11:34	8.73	ND	7.41	ND	1.32	ND	1.32
EBR4	11:29	8.58	7.19	8.04	1.39	0.54	0.85	1.31
EBR5	11:31	8.60	6.91	9.46	1.69	-0.86	2.55	1,44
EBR6	11:40	10.38	6.03	7.13	4.35	3.25	1.10	4.24
EBR7	11:46	9.64	ND	3.34	ND	6.30	ND	6.30
EBR8	11:44	9.46	5.14	6.02	4.32	3.44	0.88	4,23
KVKTGS	11:55	9.91	ND	6.85	ND	3.06	ND	3.06

- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) It, msl = feet, mean sea level
- (5) All survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) KVKTGS = Kill Van Kull Tidal Gauging Station (Pier 1).

Table VIII
Summary of Ground Water Elevations and NAPL Thicknesses
January 24, 1997
Interceptor Trench IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msi)	Ground Water Elevation (ft, msi)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
EB33	10:46	12,37	ND	9.01	ND	3.36	ND	3.36
EB34	10:44	12.84	8.90	9.22	3,94	3.62	0.32	3.90
EB35	10:40	11.61	7.37	7.38	4.24	4.23	0.01	4.24
EB36	10:39	9.76	NO	5,26	ND	4.50	ND	4.50
EB41	10:35	12.11	9.36	9.44	2.75	2.67	0.08	2.74
EB42	10:32	10.08	7.42	7.54	2.66	2.54	0,12	2.65
EB44	10:30	12.58	ND	10.19	ND	2.39	ND	2.39
EB87	10:39	9.03	ND	1.78	ND	7.25	ND	7.25
EB88	10:38	8.28	ND	1.63	ND	6.65	ND	6.65
EB91	10:44	9.66	ND	5.91	ND	3,75	ND	3.75
EB92	10:45	9.10	5.68	5,80	3,42	3.30	0.12	3.41
EB93	10:48	9.76	ND	6.47	ND	3.29	ND	3.29
EB94	10:52	8.19	5.89	5,94	2.30	2.25	0.05	2.29
EB95	10:53	8.15	5.97	6.09	2.18	2.06	0.12	2.17
EB96	10:56	8.00	6.49	6.60	1.51	1.40	0.11	1.50
EB97	10:57	7.30	6.01	6.12	1.29	1.18	0.11	1,28
EB98	10:11	10.79	9.22	9.29	1.57	1.50	0.07	1.56
EB99	10:43	9.26	ND	3.35	ND	5.91	ND	5.91
EB100	11:05	14.79	9.20	9.75	5.59	5.04	0.55	5.52
ITMW1	11:00	13.85	8.27	17.40	5.58	-3.55	9.13	4.48
ITMW2	11:09	15,28	11.21	14.73	4.07	0.55	3.52	3.65
ITMW3	11:07	15.50	12.19	13.16	3,31	2.34	0.97	3,19
ITMW4	10:32	10.20	6.72	7.41	3.48	2.79	0.69	3.40
ITMW5	10:33	8.53	5.26	5.28	3.27	3,25	0.02	3.27
ITMW6	10:42	11.76	7.71	7.72	4.05	4.04	0.01	4.05
ITMW6 (7)	10:42	11.76	11.71	7.72	0.05	4.04	2.03	4,05
GMMW11	10:30	11.58	6.90	6.92	4.68	4.66	0.02	4.68
AVE J SUMP	10:38	7.94	8.55	8.59	-0.61	-0.65	0.04	-0,61
MANHOLE 1	10:37	10.11	ND	5,37	ND	4.74	ND	4.74
MANHOLE 2	10:42	10.22	ND	6.21	ND	4,01	ND	4.01
MANHOLE 3	10:47	9.86	6.60	6.62	3.26	3,24	0.02	3.26
MANHOLE 4	10:50	8.93	ND	6.25	ND	2.68	ND	2.68
MANHOLE 5	10:55	8.53	ND	6.42	ND	2.11	ND	2.11
MANHOLE 6	10:58	8.80	ND	7.54	ND	1,26	ND	1.26
MANHOLE 7	11:20	11.73	10.54	10.55	1.19	1.18	0.01	1.19
MANHOLE 8	10:31	13.93	11.56	11.57	2.37	2,36	0.01	2.37
MANHOLE 9	10:41	9.74	ND	6.33	ND	3.41	ND	3.41
SUMP A	11:15	9.99	11.84	11.86	-1.85	-1.87	0.02	-1.85
RAINAGE DITCH	11:01	8.81	ND	4.02	ND	4.79	ND	4.79

(2) ND = Not Detected

(3) NA = Not Applicable

(d) ft, mal = feet, mean sea level

(5) Well GMMW-11 surveyed by Taylor, Wiesman and Taylor. All other survey data were obtained from Casey and Keller of Millburn, NJ.

(6) All measurements performed by Exxon

(7) DNAPL measurements.

Table IX Summary of NAPL and Total Fluids Recovery Interceptor Trench IRM Bayonne Plant - Bayonne, New Jersey

NAPL RECOVERY (GALLONS)

WELL NO.	ITMW1	Total Volume
JANUARY	23.98	23.98
FEBRUARY	25.57	25.57
MARCH	25.04	25.04
FIRST QUARTER of 1997	74.59	74.59
TOTAL VOLUME OF NAPL		
PREVIOUSLY RECOVERED	0.00	0.00
TOTAL VOLUME OF NAPL		
RECOVERED BEGINNING IN 1Q97	74.59	74.59

		SUMP A and	В	AV	ENUE J SUN	IP .
	TOTAL VOLUME (GAL)	SYSTEM DOWN TIME (HOURS)	AVERAGE PUMP RATE (GPM)	TOTAL VOLUME (GAL)	SYSTEM DOWN TIME (HOURS)	AVERAGE PUMP RATE (GPM)
JANUARY	1,990,965	0	45	39,458	0	0.9
FEBRUARY	1,735,934	0	39	41,396	0	1.0
MARCH	1,670,825	0	37	41,665	0	0.9
FIRST QUARTER OF 1997	5,397,724	0	40	122,519	0	0.9

Note: 1) Avenue J Sump pumps into Sump A. Therefore, total volume for Sump A has been adjusted by subtracting the total volume of the Avenue J Sump.

²⁾ All measurements performed by Exxon

Table X
Summary of Ground Water Elevations and NAPL Thicknesses
Low Tide -- January 20, 1997
Platty Kill Canal IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msl)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msl)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
PKMW-1	11:23	9.35	4.85	5,09	4.50	4,26	0.24	4.47
PKMW-2	11:19	12.29	ND	7.40	ND	4.89	ND	4.89
PKMW-3	11:20	8.73	4.99	5.02	3.74	3.71	0.03	3.74
PKMW-4	11:29	11.99	11.18	11,22	0.81	0.77	0.04	0.81
PKMW-5	11:32	12.33	ND	12.03	ND	0.30	ND	0.30
PKMW-6	11:33	12.28	ND	9.75	ND	2.53	ND	2.53
PKMW-7	11:35	13.46	ND	10.85	ND	2.61	ND	2.61
PKMW-8	11:15	12.84	5.63	5.65	7.21	7.19	0.02	7.21
PKMW-9	11:16	12.72	ND	5.81	ND	6.91	ND	6.91
PKMW-10	11:17	12.48	ND	12.26	ND	0.22	ND	0.22
PKMW-11	11:25	10.32	8.57	18.03	1.75	-7.71	9.46	0.61
PKMW-12	11:21	8.96	8.28	9.00	0.68	-0.04	0.72	0.59
PKMW-13	11:27	11.98	ND	12.00	ND	-0.02	ND	-0.02
PKMW-14	11:10	12.77	11.31	11.38	1.46	1.39	0.07	1.45
PKMW-15	11:11	12.28	ND	10.30	ND	1.98	ND	1.98
PKMW-16	11:28	9.80	ND	9.86	ND	-0.06	ND	-0.06
GMMW-12	11:13	13.73	6.62	6.64	7.11	7.09	0.02	7.11
EB-19	11:22	9.26	4.71	6.23	4.55	3.03	1.52	4.37
PKTGS	11:30	11.92	ND	13.50	ND	-1.58	ND	-1.58

- (2) ND = Not Detected
- (3) N/A = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) Well GMMW-12 surveyed by Taylor, Wiesman and Taylor. All other survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) PKTGS = Platty Kill Canal Tidal Gauging Station.

Table XI Summary of Ground Water Elevations and NAPL Thicknesses High Tide -- January 14, 1997 Platty Kill Canal IRM

Well Designation	TIME	Measuring Point (1) Elevation (ft, msi)	Depth to NAPL (feet)	Depth to Ground Water (feet)	NAPL Elevation (ft, msi)	Ground Water Elevation (ft, msl)	NAPL Thickness (feet)	Corrected Ground Water Elevation (feet)
PKMW-1	11:44	9.35	4.93	5.08	4.42	4.27	0.15	4.40
PKMW-2	11:38	12.29	ND	7.70	ND	4.59	ND	4.59
PKMW-3	11:40	8.73	5.01	5.02	3.72	3.71	0.01	3.72
PKMW-4	11:48	11.99	ND	11.09	ND	0.90	ND	0.90
PKMW-5	11:52	12.33	ND	8.78	ND	3.55	ND	3.55
PKMW-6	11:53	12.28	ND	9.60	ND	2.68	ND	2.68
PKMW-7	12:00	13.46	ND	9.91	ND	3.55	ND	3.55
PKMW-8	11:33	12.84	5.87	6.20	6.97	6.64	0.33	6.95
PKMW-9	11:34	12.72	ND	6.09	ND	6.63	ND	6.63
PKMW-10	11:36	12.48	ND	12,63	ND	-0.15	ND	-0.15
PKMW-11	11:45	10.32	8.54	17.57	1.78	-7.25	9.03	0.70
PKMW-12	11:42	8.96	8.10	9.24	0,86	-0.28	1.14	0.72
PKMW-13	11:46	11.98	ND	11.17	ND	0.81	ND	0.81
PKMW-14	11:27	12.77	12.00	12.51	0.77	0.26	0.51	0.71
PKMW-15	11:29	12.28	ND	11.14	ND	1.14	ND	1.14
PKMW-16	11:47	9.80	ND	8.97	ND	0.83	ND	0.83
GMMW-12	11:31	13.73	7.04	7.06	6.69	6.67	0.02	6,69
EB-19	11:43	9.26	4.82	6.18	4.44	3.08	1.36	4.32
PKTGS	11:50	11.92	ND	9.00	ND	2.92	ND	2,92

- (2) ND = Not Detected
- (3) NA = Not Applicable
- (4) ft, msl = feet, mean sea level
- (5) Well GMMW-12 surveyed by Taylor, Wiesman and Taylor. All other survey data were obtained from Casey and Keller of Millburn, NJ.
- (6) All measurements performed by Exxon
- (7) PKTGS = Platty Kill Canal Tidal Gauging Station.

Table XII Summary of NAPL Recovery Platty Kill Canal IRM Bayonne Plant - Bayonne, New Jersey

		NAPI	RECOVERY (GAL)		
WELL NO.	EB19	PKMW11*	PKMW12	PKMW14	GMMW12	Total Volume
JANUARY -	2.00	45.94	4.80	0.99	1,66	55.39
FEBRUARY	2,50	49.18	4.57	0.97	0.07	57.29
MARCH	1.81	46.17	3.82	0.95	0.06	52.81
FIRST QUARTER OF 1997	6.31	141.29	13.19	2.91	1.79	165.49
TOTAL VOLUME OF NAPL	Ga TA	Tak and	63.7	275	100	- Jagar
PREVIOUSLY RECOVERED	42.73	772.67	105.33	14.92	0.00	935,65
TOTAL VOLUME OF NAPL RECOVERED BEGINNING IN 4Q95 (3)	49.04	913.96	118.52	17.83	1.79	1101.14

Notes: (1) * Total NAPL recovery for PKMW11 includes volume obtained with skimming pump. Skimming pump operated from May 23 to August 2, 1996.

- (2) All measurements performed by Exxon
- (3) Total volume of NAPL recovered does not include 6 gallons recovered at wells PKMW1, PKMW3, and PKMW8 from 4Q95 to 2Q96.

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IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND,

Plaintiffs,

v.

* H

EXXON MOBIL CORPORATION and AGC CHEMICALS AMERICAS, INC. f/k/a ICI AMERICAS, INC.,

Defendants.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND,

Plaintiffs,

V.

EXXON MOBIL CORPORATION,

Defendant.

Civil Action No. 04-4897 (DMC)

Civil Action No. 04-4898 (DMC)

BRIEF OF DEFENDANT, EXXON MOBIL CORPORATION IN OPPOSTION TO PLAINTIFFS' MOTION TO REMAND

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I. INTRODUCTION.

Plaintiffs seek remand of these consolidated cases on the ground that Defendant Exxon Mobil Corporation ("ExxonMobil") improperly invoked 28 U.S.C. § 1442(a)(1), the federal officer removal statute. But their motion is untimely. A motion challenging defects in removal procedure must be filed within thirty days after filing of the notice of removal. Plaintiffs waited thirty-three days. Whether or not the cases were properly removed, therefore, the Court cannot now remand unless it lacks subject matter jurisdiction. But it is clear that subject matter jurisdiction is present.

First, Plaintiffs allege that ExxonMobil and its predecessors in interest discharged pollutants causing injury to New Jersey's natural resources, specifically including "surface waters," "coastal wetlands," and other maritime interests, and seek damages for injuries to these maritime interests. Plaintiffs expressly allege that some of these discharges came from vessels. These allegations all fall squarely within the Court's admiralty jurisdiction. 28 U.S.C. § 1333.

Plaintiffs filed almost identical lawsuits alleging injuries from discharges at the Bayway Refinery (Civil Action No. 04-4898(DMC)) ("Bayway Compl.") and the Bayonne Refinery (Civil Action No. 04-4897(DMC)) ("Bayonne Compl."), and equally identical motions to remand. Throughout the relevant period, Bayway and Bayonne were operated together as a facility generally known as the "Jersey Works." (Notice of Removal at 1.1; Declaration of Mark S. Germann in Support of ExxonMobil's Opposition to Motion to Remand ("Germann Decl.") at ¶¶ 6-8.) The cases have now been consolidated, and ExxonMobil addresses them jointly in this opposition brief.

Second, the colorable federal defenses asserted by ExxonMobil vest the Court with subject matter jurisdiction because of the presence of a federal question. ExxonMobil's removal invoked the federal officer removal statute -- 28 U.S.C. § 1442(a)(1) -- which allows a certain class of defendants (that is, federal officers or persons acting under their direction) to remove actions to federal court if the defendant asserts a colorable federal defense. The United States Supreme Court has made clear that the subject matter jurisdiction that supports such claims is not the presence in the cases of the "federal officer" or the person acting under his direction, but the federal question raised by the colorable federal defense. Section 1442(a)(1) itself is merely a "removal statute" -- compliance with the requirements of which can be waived, and which Plaintiffs have waived by their failure to file their remand motion within the statutory period. Plaintiffs concede that ExxonMobil has asserted a colorable federal defense to their claim. It follows that subject matter jurisdiction exists and the Court may not remand.

Third, subject matter jurisdiction exists because certain of the damages which plaintiffs seek arose from actions occurring at a federal enclave, and therefore necessarily arose under federal law for purposes of 28 U.S.C. § 1331.

In any event, even if Plaintiffs had filed their motion on time, removal was proper and remand should be denied.

II. BECAUSE PLAINTIFFS' MOTIONS CHALLENGING REMOVAL WERE UNTIMELY, THE COURT HAS NO AUTHORITY TO REMAND EXCEPT FOR LACK OF SUBJECT MATTER JURISDICTION.

Plaintiffs moved to remand pursuant to 28 U.S.C. § 1447(c), which provides: "A motion to remand the case on the basis of any defect other than lack of subject matter jurisdiction must be made within 30 days after the filing date of the notice of removal under section 1446(a)." Id.² Defendant filed the Notices of Removal on October 6, 2004. Therefore, a motion challenging the removal on any basis other than lack of subject matter jurisdiction was due by November 5, 2004. Plaintiffs filed their Motions to Remand on November 8, 2004 — three days too late.

Plaintiffs' untimely motion waives all non-jurisdictional defects in a removal. The only remaining issue is whether the Court has subject matter jurisdiction. If it does, the Court is without discretion to remand. Air-Shields, Inc. v. Fullam, 891 F.2d 63, 66 (3d Cir. 1989) (district court "exceeded its statutorily defined power" by remanding for procedural defects after thirty-day limit); Pavone v. Mississippi Riverboat Amusement Corp., 52 F.3d 560, 566 (5th Cir. 1995) (district court has "no discretion to remand" when motion grounded on improper removal procedures is "not made within thirty days following filing") (emphasis in original); see also In re FMC Corp. Packaging Sys.

² Emphasis is supplied throughout this memorandum except when otherwise indicated.

<u>Div.</u>, 208 F.3d 445, 451 (3d Cir. 2000) (courts may not remand <u>sua</u> sponte based on defect in removal procedure).

Plaintiffs apparently thought they could invoke Federal Rule of Civil Procedure 6(e) -- which provides three additional days to respond to a paper after service by mail. But they were wrong. "Rule 6(e) does not extend the thirty-day period of § 1447(c), as that rule applies only when a party is required to act within a prescribed period after service, not after filing." Pavone, 52 F.3d at 566 (plaintiff waived defects in removal procedure by filing motion to remand thirty-three days after the notice of . removal) (second emphasis in original); In re: Diet Drugs Prods. Liab. Litig., No. 03-20614, 2004 U.S. Dist. LEXIS 18705 *5-6 (E.D. Pa. Sept. 14, 2004) (plaintiff waived defects by filing remand motion thirty-two days after the notice of removal); Delew v. Las Vegas Metro. Police Dep't, 108 F. Supp. 2d 1146, 1147-48 (D. Nev. 2000); see also Sea-Land Svc., Inc. v. Barry, 41 F.3d 903, 908 (3d Cir. 1994) (Rule 6(e) does not apply where action required within certain time of filing as opposed to service); Mosel v. Hills Dep't Store, Inc., 789 F.2d 251, 253 (3d Cir. 1986) (Rule 6(e) "applies only where a time period is measured from the date of service by mail").

Accordingly, Plaintiffs have waived all arguments for remand other than the absence of subject matter jurisdiction. Lack of subject matter jurisdiction, of course, cannot be waived. But

Plaintiffs do not argue that the Court lacks subject matter jurisdiction here. They are right. As we show in Sections III, IV, and V, the Court has subject matter jurisdiction on at least three independent bases: (1) admiralty jurisdiction; (2) federal question jurisdiction; and (3) federal enclave jurisdiction. It is true that not all Plaintiffs' claims, if asserted independently, would fall within the subject matter jurisdiction of this Court. But as long as any claim is within the Court's subject matter jurisdiction, all other claims are within the Court's supplemental jurisdiction. 28 U.S.C. § 1367; City of Chicago v. Int'l Coll. of Surgeons, 522 U.S. 156, 165 (1997).

III. PLAINTIFFS' CLAIMS FALL WITHIN THIS COURT'S ADMIRALTY JURISDICTION.

Maritime claims generally may not be removed, because of the "saving to suitors" clause in 28 U.S.C. § 1333(1). See Romero v.

Int'l Terminal Operating Co., 358 U.S. 354, 371-72 (1959); United

States Express Lines, Ltd. v. Higgins, 281 F.3d 383, 390 (3d Cir.

2002); Morris v. Princess Cruises, Inc., 236 F.3d 1061, 1069 (9th

Cir. 2001). ExxonMobil therefore did not invoke this Court's

admiralty jurisdiction in its Notices of Removal. But removal of
an unremovable admiralty case is no more than a "waivable defect
in removal" procedure. Dao v. Knightsbridge Int'l Reins. Corp.,

15 F. Supp. 2d 567, 570-73 (D.N.J. 1998); accord Baris v. Sulpicio

Lines, Inc., 932 F.2d 1540, 1543-47 (5th Cir. 1991). After the

thirty-day period has passed, a case that falls within the Court's

admiralty jurisdiction cannot be remanded to state court. Pavone, 52 F.3d at 566-67; Baris, 932 F.2d at 1543-47; Dao, 15 F. Supp. 2d at 570-73.

1 1.

Plaintiffs' claims for injury to New Jersey "surface waters" and "coastal wetlands" allege injury to maritime resources, in areas within the ebb and flow of the tide. Plaintiffs acknowledge that their claims arose, at least in part, because of oil spills from vessels on navigable waters. All these claims plainly fall within the Court's admiralty jurisdiction.

The rules for admiralty jurisdiction in tort are not complex.

The "traditional test" inquired only as to the location of the tort. Jerome B. Grubart, Inc. v. Great Lakes Dredge & Dock Co.,

513 U.S. 527, 531-32 (1995); Ex Parte Garnett, 141 U.S. 1, 14-15 (1891). If a tort took effect on "navigable waters" or on the "sea" (that is, areas subject to the ebb and flow of the tide), admiralty jurisdiction followed. Jerome B. Grubart, 513 U.S. at 531-32; Ex Parte Garnett, 141 U.S. at 14-15.

Congress and the Supreme Court have since slightly modified this simple test in an effort to ensure that admiralty jurisdiction reaches those cases having some connection to maritime activity. In 1948, Congress enacted the Extension of Admiralty Jurisdiction Act, 46 U.S.C. App. § 740, making clear that admiralty jurisdiction extends to "'all cases' where the injury was caused by a ship or other vessel on navigable water,

even if such injury occurred on land." <u>Jerome B. Grubart</u>, 513

U.S. at 532 (noting that the purpose of the Act was "to end concern over the sometimes confusing line between land and water"). On the other hand, the Supreme Court has added a maritime connection inquiry to the traditional locality test, designed to keep a "class of odd cases out," <u>Jerome B. Grubart</u>, 513 U.S. at 532-34 -- cases where no maritime interests are at stake, such as an airplane that by happenstance crashes in navigable waters, or collisions between swimmers at a public beach. <u>See Executive Jet Aviation</u>, Inc. v. City of Cleveland, 409 U.S. 249, 250, 255-56, 263-78 (1972).

Nevertheless, the Supreme Court has stressed that it has not departed far from the traditional locality test. See Jerome B.

Grubart, 513 U.S. at 532-34, 538-42; Neely v. Club Med Mgmt.

Services, Inc., 63 F.3d 166, 180 n.9 (3d Cir. 1995). The Court has not made "any radical alteration of the traditional criteria for invoking admiralty jurisdiction in tort cases, but has simply . . . reject[ed] a location rule so rigid as to extend admiralty jurisdiction to a case involving an airplane, not a vessel, engaged in activity far removed from anything traditionally maritime." Jerome B. Grubart, 513 U.S. at 542-43.

Here, the maritime flavor of many of Plaintiffs' claims is evident. Plaintiffs' allegations satisfy both the traditional

"locality" test and the undemanding "connection" test, and thus fall squarely within the Court's admiralty jurisdiction.

A. The "Locality Test" Is Satisfied.

The locality test requires <u>either</u> (1) that the tort "occur" on "navigable water," or (2) that the injury suffered (whether on land or elsewhere) was "caused by a vessel on navigable water."

See <u>Jerome B. Grubart</u>, 513 U.S. at 534; accord <u>Neely</u>, 63 F.3d at 179.

A "tort 'occurs' where the alleged negligence took effect."

Executive Jet, 409 U.S. at 266; accord Edynak v. Atl. Shipping

Inc., 562 F.2d 215, 221 n.8 (3d Cir. 1977); Butler v. Am. Trawler

Co., 887 F.2d 20, 21 (1st Cir. 1989). Claims for pollution damage

to navigable waters themselves, therefore, necessarily meet the

locality test. Maryland v. Amerada Hess Corp., 350 F. Supp. 1060,

1064 (D. Md. 1972) ("the tort did not arise until the oil polluted

the waters of the State"); California v. S.S. Bournemouth, 307 F.

Supp. 922, 925-27 (C.D. Cal. 1969) (alleged injury to "the water

itself and presumably the marine life therein" sounds in

admiralty). "It is of little significance that the acts

[&]quot;Navigable waters" include all areas that are subject to the ebb and flow of the tide and all non-tidal waters that are actually or potentially navigable. See Executive Jet, 409 U.S. at 253 (the "locality test was expanded to include not only tidewaters, but all navigable waters, including lakes and rivers"); United States v. Stoeco Homes, Inc., 498 F.2d 597, 609-10 (3d Cir. 1974); In re Complaint of Paradise Holdings, Inc., 795 F.2d 756, 759 (9th Cir. 1986); see also Hassinger v. Tideland Elec. Membership Corp., 781 F.2d 1022, 1026-27 (4th Cir. 1986) ("the boundary of admiralty jurisdiction in tidal areas . . . extends to the mean high water mark at all times").

Elec. Co., 278 F. Supp. 209, 211 (D. Md. 1968); accord Nat'l Sea Clammers Ass'n v. City of New York, 616 F.2d 1222, 1224-25, 1235 (3d Cir. 1980) (land-based discharge of waste into navigable waters supports admiralty jurisdiction), rev'd on other grounds sub nom., Middlesex County Sewerage Authority v. Nat'l Sea Clammers Ass'n, 453 U.S. 1 (1981). Accordingly, Plaintiffs' claims for pollution damage to "surface waters" and "coastal wetlands" satisfy the locality test as to all such areas that are subject to the ebb and flow of the tide or are actually or potentially navigable.

The complaints do not identify by name the bodies of water allegedly injured but say enough to allow one to discern that the waters meet the test. First, Plaintiffs allege injury to surface waters and wetlands "adjacent to" the ExxonMobil Bayway and Bayonne properties. (Bayway Compl. ¶ 26, Bayonne Compl. ¶ 37.) Those waters include Kill Van Kull, Arthur Kill, Upper New York Bay, the Rahway River, Morses Creek, and Platty Kill Creek. (Germann Decl. ¶¶ 4, 5.) All are subject to the ebb and flow of the tide and all are navigable. (Id.) Arthur Kill, Kill Van Kull, and Upper New York Bay are major arteries of maritime commerce. Second, "coastal wetlands," expressly identified by

⁴ Plaintiffs' recent interrogatory answers, while not limiting the scope of the complaints, make explicit that Plaintiffs seek damages for discharges into Upper New York Bay, Kill Van Kull, Arthur Kill, the tidal portion of Morses Creek, and several tidal

Plaintiffs as "affected natural resources," by definition are subject to the ebb and flow of the tide. Third, Plaintiffs allege that "12 oil spill citations from the U.S. Coast Guard" are among the discharges for which they seek damages. (Bayonne Compl. ¶ 31.) The Coast Guard has jurisdiction only over spills to navigable waters, and each of the referenced citations involved such a spill. (Germann Decl. ¶ 91.)

The locality test is also, and independently, met under the Extension of Admiralty Jurisdiction Act, since Plaintiffs allege injuries caused by spills from vessels on navigable waters.

(Bayonne Compl. ¶¶ 25, 31; Bayway Compl. ¶ 22.) Under the Act, all injuries allegedly caused by such spills — whether to water or land — are within admiralty jurisdiction. 46 U.S.C. App. § 740.

B. The "Connection Test" Is Satisfied.

An incident bears a significant relationship to maritime activity as required by Executive Jet whenever it (1) has "a potential impact on maritime commerce"; and (2) "bear[s] a substantial relationship to traditional maritime activity."

Sinclair v. Soniform, Inc., 935 F.2d 599, 601 (3d Cir. 1991);

accord Jerome B. Grubart, 513 U.S. at 533-34; Sisson v. Ruby, 497

marshes and wetlands. (See Pl.'s Partial Answers to Interrogatories Propounded by ExxonMobil ("Interrog. Answers") for Bayway and Bayonne Complaints, Answers Nos. 2 and 3.)

U.S. 358, 361-65 (1990); Foremost Ins. Co. v. Richardson, 457 U.S. 668, 674-75 (1982).5

The inquiry focuses on generalities and must be approached with a "broad perspective." See Sisson, 497 U.S. 363-65, 367.

For example, the test "does not turn on the actual effects on maritime commerce . . .; nor . . . on the particular facts of the incident [of] this case"; it turns on whether the incident, based on its "general features," is of a type "likely to disrupt commercial activity." Sisson, 497 U.S. at 363 (emphasis in original). Similarly, the "relevant 'activity' is defined not by the particular circumstances of the incident, but by the general conduct from which the incident arose." Id. at 364.

The Incidents Alleged Are Of The Type Likely To Disrupt Maritime Commerce.

Plaintiffs allege that New Jersey's navigable waters have been polluted by oil and other "hazardous substances." (Bayway Compl. ¶ 26; Bayonne Compl. ¶ 30.) They also allege that the State's natural resources have been damaged by spills from ExxonMobil vessels at sea. (Bayway Compl. ¶ 22; Bayonne Compl. ¶¶ 25, 26, 31.) There is no question that pollution of navigable

At one time, the Third Circuit adopted a four-factor test to determine whether an activity is "substantially related" to traditional maritime pursuits. Edynak, 562 F.2d at 220-21; see also Sinclair, 935 F.2d at 602. That test is clearly met here, but in fact has been superseded by the Supreme Court's disapproval of multi-part tests on the ground that its own decisions provide "appropriate and sufficient guidance to the federal courts." Sisson, 497 U.S. at 367 n.4; Jerome B. Grubart, 513 U.S. at 544-45.

waters can disrupt navigation and commercial fishing, and can damage vessels -- all elements of "maritime commerce." See, e.g., Jerome B. Grubart, 513 U.S. at 539 (incidents that cause "disruption in the water course itself" or "lead to restrictions on the navigational use of [a] waterway" can disrupt maritime commerce); Nat'l Sea Clammers Ass'n, 616 F.2d at 1235 (pollution injuring fishing industry constitutes injury to maritime commerce); Oppen v. Aetna Ins. Co., 485 F.2d 252, 257 (9th Cir. 1973) (claims for damage to vessels and interference with navigational rights caused by discharge of oil into the water "sound in maritime tort"); Kohlasch v. New York State Thruway Auth., 460 F. Supp. 956, 963 (S.D.N.Y. 1978) ("[p]olluted waters may impede navigation" or damage boats); Potomac River Ass'n, Inc. v. Lundeberg Maryland Seamanship Sch., Inc., 402 F. Supp. 344, 358 (D. Md. 1975) (interference with right to fish due to oil spill constitutes maritime tort).

Indeed, Plaintiffs' "lost use" claims directly allege disruption of maritime commerce. Plaintiffs claim that pollution caused by ExxonMobil has disrupted "commercial and industrial uses" of the State's navigable waters, including "boating," "fishing," and "transportation of goods and services." (Bayway Compl. NT 14, 28, 31, and prayer for relief for first count; Bayonne Compl. NT 17, 39, 42, and prayer for relief for first count.) Maritime commerce is also squarely implicated by

Plaintiffs' allegations that oil spilled from ExxonMobil vessels and caused injury. Obviously, any incident that could impose liability on a vessel engaged in maritime commerce has the potential to impact that commerce, and "the fundamental interest giving rise to maritime jurisdiction is 'the protection of maritime commerce.'" Norfolk So. Ry. Co. v. Kirby, 125 S. Ct. 385, 394 (2004); Sisson, 497 U.S. at 362.

There Is A Substantial Relationship To Traditional Maritime Activity.

Where maritime interests are harmed, courts following Executive Jet have repeatedly found a nexus between the discharge of pollutants into navigable waters and traditional maritime activity. In National Sea Clammers Association, for example, the Third Circuit found that the "discharge of certain nutrient-rich sewage and toxic wastes into the Atlantic Ocean or its tributaries" bears a "significant relationship to traditional maritime activity" where those who "make their living harvesting fish and shellfish from the water and ocean beds" are allegedly injured therefrom. 616 F.2d at 1224, 1235. See also Oppen, 485 F.2d at 257 (oil spilled into Santa Barbara Channel from landbased locus and interfering with non-commercial boaters bears a significant relationship to traditional maritime activity); Union Oil Co. v. Oppen, 501 F.2d 558, 561 (9th Cir. 1974) (same); Kohlasch, 460 F. Supp. at 959, 962-63 (discharge of oil, sand, debris, and chemicals from land-based locus into navigable waters

River Ass'n, 402 F. Supp. at 349, 358 ("dredging, filling, and bulkheading" of land damaging "natural environment of the Creek" and injuring commercial fishing industry meets nexus requirement).

Plaintiffs complain of spills from tankers on navigable waters and apparently allege that ExxonMobil's receiving and shipping operations at the Bayway and Bayonne refineries also contributed to the pollution. (Bayway Compl. ¶ 22, Bayonne Compl. ¶ 25, 26, 31.) The conduct alleged not only bears a substantial relationship to maritime activity; it constitutes maritime activity itself. See Sisson, 497 U.S. at 362 ("protecting commercial shipping is at the heart of admiralty jurisdiction"); Edynak, 562 F.2d at 221 ("admiralty law has traditionally been concerned with the loading and unloading of vessels"); Bias v. Tidewater Marine Serv., Inc., 612 So.2d 927, 929 (La. App. 4th Cir. 1993) (same).

⁶ Even land-based activity causing no damage to the water itself but otherwise impacting maritime interests is sufficient to establish the nexus requirement. See, e.g., Motor Ship Pac. Carrier v. Union Camp Corp., 489 F.2d 152, 153-56 (5th Cir. 1974) (substantial maritime connection exists where smoke-stack emissions from shore-based paper mill obstructed vision of vessel's crew that crashed into bridge; the "maritime nature of the tort is . . . undeniable"); Sound Marine & Mach. Corp. v. Westchester County, 100 F.2d 360, 362 (2d Cir. 1938) (pre-Executive Jet case involving damage claims arising from laying sewer pipe under Channel found admiralty jurisdiction due to location of tort and maritime nature of the rights invaded).

IV. EXXONMOBIL'S FEDERAL DEFENSES INVOKE THE COURT'S SUBJECT MATTER JURISDICTION.

The foregoing discussion shows that the Court clearly has subject matter jurisdiction in admiralty. The locality test is met, and a maritime nexus is present. Even if this were not so, however, there would still be subject matter jurisdiction. That is because of the colorable federal defenses identified in ExxonMobil's Notices of Removal.

To remove a case pursuant to 28 U.S.C. § 1442(a)(1), a defendant must aver a colorable federal defense in its removal petition. Mesa v. California, 489 U.S. 121 (1989). ExxonMobil did just that. (Notice of Removal ¶ 1.20(a)-(f).) Plaintiffs now argue that ExxonMobil failed to comply with the provisions of Section 1442(a)(1). But whether ExxonMobil complied with Section 1442(a)(1) is of no moment, since any such defect is procedural in nature and was waived by Plaintiffs' failure to file a timely motion to remand.

Section 1442(a)(1) is a "removal statute" that does not "independently support Art. III 'arising under' jurisdiction."

Mesa, 489 U.S. at 136. It "merely serves to overcome the 'well-pleaded complaint' rule which would otherwise preclude removal even if a federal defense were alleged." Id. at 136-37. In Mesa, the Supreme Court explained the distinction between "jurisdictional statutes" that "do nothing more than grant jurisdiction over a particular class of cases" and "the federal

law under which [an] action arises." <u>Id</u>. Section 1442(a)(1) is a "pure jurisdictional statute, seeking to do nothing more than grant district court jurisdiction over cases in which a federal officer is a defendant." <u>Id</u>. at 136.

The "substantive Article III foundation" for claims removed pursuant to Section 1442(a)(1) is the "federal question" raised by a "colorable federal defense" in the removal petition. Id. at 126-37; accord Jefferson County v. Acker, 527 U.S. 423, 431 (1999) ("the federal-question element is met if the defense depends on federal law"); In re TMI Litig. Cases Consol. II, 940 F.2d 832, 850-51 (3d Cir. 1991); Akin v. Big Three Indus., Inc., 851 F. Supp. 819, 823 (E.D. Tex. 1994) ("assertion of the federal defense provides federal question jurisdiction"); cf. Korea Exch. Bank v. Trackwise Sales Corp., 66 F.3d 46, 49 (3d Cir. 1995) (recognizing that the Supreme Court has "consistently refused to treat the removal statute as imposing independent jurisdictional requirements"). As explained by the Court in one of its early decisions, "[i]f one [question of a federal character] exist[s], if there be a single ingredient in the mass, it is sufficient. That element is decisive upon the subject of jurisdiction." Mesa, 489 U.S. at 129 (quoting The Mayor v. Cooper, 6 Wall. 247, 252 (1868)) (internal quotation marks and citations omitted) (emphasis in original).

Because Section 1442(a)(1) speaks to <u>removal</u> jurisdiction — and not to <u>subject matter</u> jurisdiction — failure to comply with its provisions, like all other defects in removal procedure, can be waived. Moreover, non-compliance with its provisions (as alleged by Plaintiffs here) does not divest the Court of subject matter jurisdiction. This is made clear by <u>Mackay v. Uinta Dev.</u>
Co., 229 U.S. 173 (1913) and its progeny.

In <u>Mackay</u>, the only basis for federal subject matter jurisdiction appeared in the defendant's counterclaim. <u>Id</u>. at 174-75. Ordinarily, a case where subject matter jurisdiction exists only for a counterclaim (like a case where the federal question arises only by way of defense) may not be removed.

Nevertheless, the defendant did so, and the plaintiff did not object. <u>Id</u>. The Supreme Court analyzed whether the case "could be lawfully tried and determined," assuming removal was "not in conformity with the removal statute." <u>Id</u>. at 175-76. It found that it could. Id.

The Mackay court explained that "[r]emoval proceedings are in the nature of process to bring the parties before the [district] court," and that defect in removal can be waived "by failing to seasonably object." Id. at 176. "[R]egardless of the manner in which the case was brought or how the attendance of the parties.

. . was secured," "irregularities" in that process are "waivable" and do not "operate[] to deprive [the court] of the power to

determine the cause" where the court has jurisdiction of the subject matter. Id. at 176-77. The Supreme Court determined that the allegations of defendant's counterclaim vested the court with subject matter jurisdiction over the cause. Id.

Mackay remains controlling authority and has been relied upon expressly by courts in recent years. See, e.g., Grubbs v. Gen.

Elec. Credit Corp., 405 U.S. 699, 702-06 (1972) (judgment sustained despite no basis for removal jurisdiction because no objection to removal and subject matter jurisdiction present at time of judgment); Fax Telecommunicaciones Inc. v. AT&T, 138 F.3d 479, 487-88 (2d Cir. 1998) (federal question in defendant's counterclaim insufficient for removal jurisdiction but sufficient for subject matter jurisdiction where plaintiff failed to object to removal timely); Property Clerk v. Smith, No. 00CIV. 2133(AKH), 2000 WL 1725017, at *2-3 (S.D.N.Y. 2000) (same).

Exch. Bank. There, the defendant -- a citizen of the forum state
-- removed the case to federal court on diversity grounds in
violation of 28 U.S.C. § 1441(b). Korea Exch. Bank, 66 F.3d at
48. The plaintiff did not object, but the court sua sponte
remanded the case seven months after it was removed. Id. at 47.
On appeal, the Third Circuit vacated the remand order. Id. at 5152. It found that removal by the in-state defendant, which was
not authorized by Section 1441(b), was a "'defect in removal

procedure' which can be waived." Id. at 50. Because the removal statute did not "impos[e] independent jurisdictional requirements," failure to comply with it did "not deprive [the] court of subject matter jurisdiction." Id. at 49-51. The underlying subject matter jurisdiction requirements -- diverse parties and the amount in controversy -- were met; therefore, the court had no discretion to remand. Id. at 50-51.

We will show in Section VI that ExxonMobil's removal pursuant to Section 1442(a)(1) was proper. But even assuming arguendo that it was not — i.e., that ExxonMobil was not acting under the direction of a federal officer under Section 1442(a)(1) and that it was not sued "for any act under color of such office" — ExxonMobil would be in no different position than the defendants in the cases cited. Like them, ExxonMobil would not be within the class of persons entitled to remove. That would not alter the fact that the Court has subject matter jurisdiction. And Plaintiffs' failure to make a timely remand motion has waived all defects in removal other than lack of subject matter jurisdiction.

In short, because Section 1442(a)(1) does not create independent jurisdictional requirements, a failure to comply with it cannot deprive the Court of subject matter jurisdiction over the case. As long as the basis for subject matter jurisdiction articulated in Mesa is met -- that is, as long as a colorable

federal defense is present -- the Court has no discretion to remand.

Plaintiffs do not dispute that ExxonMobil has asserted at least a colorable federal defense to their claims. See infra Section VI.C.

V. SUBJECT MATTER JURISDICTION IS PRESENT BECAUSE SOME OF PLAINTIFFS' CLAIMS AROSE IN A FEDERAL ENCLAVE.

In addition to admiralty and federal question jurisdiction, the Court has subject matter jurisdiction over Plaintiffs' claims because some arose in a federal enclave. Plaintiffs expressly "do not dispute that the district courts have original jurisdiction over claims arising out of conduct that occurs on federal property." (Pl.'s Brief in Support of Motion to Remand, Civil Action No. 04-4898 (DMC) ("Bayway Remand") at 19; Pl.'s Brief in Support of Motion to Remand, Civil Action No. 04-4897 (DMC) ("Bayonne Remand") at 19-20); see also Mater v. Holley, 200 F.2d 123, 124-25 (5th Cir. 1952); Crackau v. Lucent Techs., Civ. No. 03-1376, 2003 WL 21665135 at *5-6 (D.N.J. Jun. 25, 2003); Reed v. Fina Oil & Chem. Co., 995 F. Supp. 705, 713 (E.D. Tex. 1998); Akin, 851 F. Supp. at 821-22. Plaintiffs inquire only about "which property . . . belongs to the federal government." (Bayway Remand at 19; Bayonne Remand at 19.)

The federal enclave at issue is 37 acres forming part of the "40 Acre Tank Field," and which is included in the property

Plaintiffs identify in their complaint as the Bayway Refinery

property. (Declaration of Jennifer Borzi in Support of ExxonMobil's Opposition to Plaintiffs' Motion to Remand ("Borzi Decl.") ¶ 4-5.) In 1943, the Defense Plant Corporation -- an agency of the federal government -- purchased that parcel of land from ExxonMobil's predecessor in interest, Standard Oil Company of New Jersey. (Borzi Decl. ¶ 2); Reed, 995 F. Supp. at 709 (noting Defense Plant Corporation was an agency of the federal government). The federal government owned the land until November 1, 1947, and it was later re-purchased by ExxonMobil. (Borzi Decl. ¶ 3.)

Emergency Pipeline," sometimes known as the "Big Inch," a major construction project built by the Government during the War in order to bring crude oil from Texas to the Northeast free of the danger of German submarine attacks, which were sinking the tankers that had previously transported the crude. (Germann Decl. ¶ 79.) The parcel conveyed to the Government for this purpose includes areas that are part of the land identified in Plaintiffs' complaint, and areas that Plaintiffs' interrogatory answers identify as subject to groundwater contamination for which they seek recovery in this action. (See Interrog. Answers for Bayway Complaint, Answer No. 1, Ex. A, Areas F-1 (partial) and F-2; Borzi Decl. ¶ 5.) There is no question that discharge of petroleum to soils (and potentially groundwater) occurred in this area during

the period of Government ownership. (See Germann Decl. ¶¶ 79-82, Exs. 118, 119 (pictures of fire at Tank 665 on March 2, 1944);

Borzi Decl. ¶ 4-5). Any claim for damages arising from such discharges during the period of federal ownership is governed by federal law. Subject matter jurisdiction is therefore present.

VI. REMOVAL WAS APPROPRIATE UNDER THE FEDERAL OFFICER REMOVAL STATUTE.

Even if Plaintiffs' motion to remand had been timely, it would still fail, because ExxonMobil properly removed the case pursuant to 28 U.S.C. § 1442(a)(1). As an initial matter, Plaintiffs argue that "removal statutes are to be strictly construed with doubt . . resolved in favor of remand." (Bayway Remand at 5; Bayonne Remand at 5, both citing cases analyzing removal pursuant to 28 U.S.C. § 1441.) That is not true here. The federal officer removal statute is "broadly construed." Sun Buick, Inc. v. Saab Cars USA, Inc., 26 F.3d 1259, 1262 (3d Cir. 1994) ("the federal officer removal statute . . . is broadly construed, as distinguished from section 1441 . . . which is strictly construed"); accord Arizona v. Manypenny, 451 U.S. 232, 242 (1981) ("policy favoring removal 'should not be frustrated by a narrow, grudging interpretation of

TexxonMobil's removal was premised in part on federal enclave jurisdiction. Accordingly, removal on that basis was proper, even if Plaintiffs' remand motions had been timely. See 28 U.S.C. § 1441; Crackau, 2003 WL 21665135, at *5-6; Reed, 995 F. Supp. at 713; Akin, 851 F. Supp. at 821-22.

\$ 1442(a)(1)'") (quoting Willingham v. Morgan, 395 U.S. 402, 407 (1969)).

As recognized by Plaintiffs, "[t]o establish removal jurisdiction under section 1442(a)(1), a defendant . . . must establish that (1) it is a 'person' within the meaning of the statute; (2) the plaintiff's claims are based upon the defendant's conduct 'acting under' a federal office; (3) it raises a colorable federal defense; and (4) there is a causal nexus between the claims and the conduct performed under color of a federal office."

Feidt v. Owens Corning Fiberglass Corp., 153 F.3d 124, 127 (3d Cir. 1998); (Bayway Remand at 6-7; Bayonne Remand at 6-7)9.

ExxonMobil has established that each factor is satisfied here. We discuss first the appropriate standard and the showing that ExxonMobil has made that the standard is met. Subpart E addresses the errors in Plaintiffs' analysis.

A. ExxonMobil Is A "Person" Under Section 1442(a)(1).

Plaintiffs do not dispute that ExxonMobil is a "person" for purposes of removal jurisdiction under Section 1442(a)(1). This is because "the majority of courts have held that a corporation is a person under the statute." Crackau, 2003 WL 21665135, at *2; Guckin, 259 F. Supp. 2d at 416 (although the Third Circuit "has

⁸ Some courts combine the second and fourth factors and analyze them together as one.

⁹ Plaintiffs rely on <u>Guckin v. Nagle</u> in setting forth this test, inadvertently identifying it as a Third Circuit case. <u>Guckin</u> is an Eastern District of Pennsylvania case. <u>Guckin v. Nagel</u>, 259 F. Supp. 2d 406 (E.D. Pa. 2003).

taken no position on the issue, two lower courts within the Circuit have [found corporations are 'persons' under the statute]").

B. ExxonMobil Was "Acting Under" "Color Of A Federal Office."

A defendant meets the "acting under" requirement by showing that the "federal government had 'direct and detailed control' over the operation in question." Reed, 995 F. Supp. at 710; accord In re Methyl Tertiary Butyl Ether ("MTBE") Prod. Liab.

Litig., MDL No. 1358 (SAS), 2004 U.S. Dist. LEXIS 4068, at *20 (S.D.N.Y. Mar. 16, 2004) (acting under requirement is met where "the acts that form the basis for the . . suit were performed pursuant to an officer's direct orders or to comprehensive and detailed regulations"); Fung v. Abex Corp., 816 F. Supp. 569, 572 (N.D. Cal. 1992). "[T]here is 'no precise standard for the extent of control necessary'" to meet "the 'acting under' clause," but the cases show it has been construed "particularly" broadly. In re MTBE Prod. Liab. Litig., 2004 U.S. Dist. LEXIS 4068, at *20.

Courts have identified numerous fact patterns that demonstrate the requisite federal control. Where the Government requires, for example, detailed accountings, pre-approval of expenditures for construction and operations, pre-approval of employee salaries, approval for manufacturing non-government-specified products, a certain grade and quality of product, and certain testing procedures, it is exercising direct and detailed

control over an operation. See Reed, 995 F. Supp. at 710-11. A direct teletype link between a local facility and Washington, D.C. from which federal officials could issue directives and instructions is also indicative of the requisite control. Id. at 711. See also Williams v. Todd Shipyards, No. H-95-4592, 1996
U.S. Dist. LEXIS 22676, at *10-16 (S.D. Tex. Apr. 2, 1996); Pack v. AC & S, Inc., 838 F. Supp. 1099, 1103 (D. Md. 1993); Fung, 816
F. Supp. at 572-73 (federal control established where government monitored performance, required construction and repairs in accordance with approved specifications, subjected contract supplies to government inspection and approval, and performed product testing).

ExxonMobil has provided this Court with ample evidence of the requisite federal control over the Jersey Works' operations during World War II and a period thereafter. (See generally, Germann Decl. ¶¶ 4-90; Declaration of Cornelius Boyle in Support of ExxonMobil's Opposition to Motion to Remand ("Boyle Decl.") ¶¶ 7-17; Declaration of Robert E. Fairchild in Support of ExxonMobil's Opposition to Motion to Remand ("Fairchild Decl.") ¶¶ 2-9; Declaration of Malcolm A. Weiss in Support of ExxonMobil's Opposition to Motion to Remand ("Weiss Decl.") ¶¶ 4-12.) That evidence shows, among other things, the following:

- The Petroleum Administration for War ("PAW") and other government agencies issued daily orders and directives to Standard Oil Company of New Jersey ("SONJ") -
 ExxonMobil's predecessor in interest -- regarding the manufacture, production, storage, and transfer of petroleum products. (Germann Decl. ¶¶ 16-28.) Those orders often required the refineries to alter operations "virtually overnight." (Germann Decl. ¶ 21.)
- The PAW dictated the nature and amount of all products produced at Jersey Works, requiring many products specially tailored to military requirements, including 100-octane aviation gasoline, all-climate 80-octane gasoline, "Navy Special" fuel oil, waxes, isopropyl alcohol, and gun and recoil oils -- most of which were not produced in any significant amount at Jersey Works before the War. (Germann Decl. ¶¶ 24, 29-62; Boyle Decl. ¶¶ 7.) Total throughput for Jersey Works, for example, increased by 67 percent during the War at the direction of the PAW. (Germann Decl. ¶¶ 31.) Similarly,

These orders and directives usually came in the form of a "recommendations," but they did not allow for discretionary compliance. "The PAW 'recommendations' had the force of directives but the form of recommendation was maintained." (Germann Decl. ¶ 16 (quoting Brendan J. O'Hallaghan, The Role of Defense Supplies Corporation in the Wartime Aviation Gasoline Program, at 79 (1948)).)

- isopropyl alcohol production increased by approximately 50 percent. (Germann Decl. ¶ 58.)
- The PAW directed SONJ to operate Jersey Works on a continuous basis at or above capacity and without normal periodic maintenance "month after month." Jersey Works "reported various records for uninterrupted operations.

 Each record was often exceeded the following month with the announcement that the run was still continuing."

 (Germann Decl. II 63-65; Boyle Decl. I 13.)
- Government officials also controlled all construction at the Jersey Works. Because steel, copper, and virtually all other materials needed for construction or modification of refinery facilities were scarce, no facilities could be modified or improved without approval from the WPB, and under applicable law and regulations approval was available only for construction projects "critical to the war effort." (Germann Decl. ¶¶ 66-73; Fairchild Decl. ¶¶ 2-9.)
- Because German U-boats were sinking the tankers that had previously delivered Jersey Works' crude oil supplies, the PAW ordered a major change in transportation operations; it directed that crude oil be shipped by rail tank cars instead of tankers. The PAW required SONJ to construct temporary loading/unloading racks,

short pipelines, pumps and storage tanks to facilitate shipment by rail. Due to the government's restriction on steel allocations, the racks -- ordinarily made of steel with steel "catch-pans" to capture spills -- were made of wood without catch-pans. (Germann Decl. ¶¶ 74-78; Boyle Decl. ¶¶ 9-12; Fairchild Decl. ¶¶ 8-10.)

These facts show overwhelmingly that operations at Jersey Works, from 1941 to 1945, were under federal control.

C. ExxonMobil Has Asserted Colorable Federal Defenses.

The requirement of a colorable federal defense is also "broadly construed." In Re MTBE Products Liab. Litig., 2004 U.S. Dist. LEXIS 4068, at *22. "The question is not whether [a] claimed defense is meritorious, but only whether a colorable claim to such a defense has been made." Fung, 816 F. Supp. at 573; accord Willingham, 395 U.S. at 407 ("The officer need not win his case before he can have it removed."); Akin, 851 F. Supp. at 823 (that defendant "might or might not ultimately prevail" on its defense is "beside the point;" "[a]ny determination as to the merits is collateral" to the removal issue).

Plaintiffs acknowledge that ExxonMobil identified several federal defenses in its Notices of Removal and concede, for purposes of jurisdiction, that ExxonMobil "is not required to establish the likelihood of success on any of them." (Bayway Remand at 10; Bayonne Remand at 10.) There is no doubt that those federal defenses are, at the very least, colorable.

For example, ExxonMobil's allegations and evidence (filed with this Opposition) readily support a government contractor defense. See Boyle v. United Techns. Corp., 487 U.S. 500 (1988) (establishing three-part test for extending government immunity for discretionary acts to government contractors); Winters v. Diamond Shamrock Chem. Co., 149 F.3d 387, 400 (5th Cir. 1998); Arness v Boeing No. Am., Inc., 997 F. Supp. 1268, 1272 (C.D. Cal. 1998). The evidence shows (1) that the government issued specific directives regarding the production and handling of the contaminants complained of here; (2) that ExxonMobil complied with those directives; and (3) that the government knew of the "danger" (that is, the potential for contamination) associated with the manner in which it directed operations. See Section VI.B., supra; Section VI.D., infra. That showing is "more than sufficient" to state a colorable claim. Reed, 995 F. Supp. at 712 (court could "presume that the government was informed of the attendant dangers of the[] products" where government dictated quality, content, and testing of same); see also Winters, 149 F.3d at 400-01; Akin, 851 F. Supp. at 823 (allegation that product manufactured pursuant to government specifications sufficient for colorable defense); Arness, 997 F. Supp. at 1272-73 (colorable defense was asserted in contamination case, even where removal was ultimately denied for failure to meet nexus prong); Bahrs v. Hughes Aircraft Co., 795 F. Supp. 965, 969-70 (D. Ariz. 1992) (same).

Plaintiffs do not dispute that ExxonMobil has stated a colorable government contractor defense. Rather, they comment that "courts have held that . . . [the] defense does not . . . justif[y] removal." (Bayway Remand at 10; Bayonne Remand at 10, both citing Good v. Armstrong World Indus., 914 F. Supp. 1125 (E.D. Pa. 1996), Ryan v. Dow Chemical Co., 781 F. Supp. 934 (E.D.N.Y. 1992), and Feidt). This is nonsense. Good is the only case Plaintiffs cite that even speaks to Plaintiffs' assertion. 11 And it provides only dictum other courts have rejected. In Good, after finding no "causal nexus" (as required by a different prong of the removal test) and thus no basis for removal jurisdiction, the district court wondered whether removal would have been appropriate from a policy perspective. Good, 914 F. Supp. at 1130-31. It speculated that it would not, based primarily on the unsubstantiated notion that "[t]he government contractor defense is not subject to [state court] manipulation." Id. at 1131. Even assuming arguendo that this dubious policy argument is valid, Plaintiffs cite no case that precludes federal officer removal

Ryan did not so hold but merely questioned whether the government contractor defense constitutes a "standard of care" or a "defense" that could support removal. Ryan, 781 F. Supp. at 944-45. The Third Circuit, however, clearly recognizes it as a "defense." Carley v. Wheeled Coach, 991 F.2d 1117, 1120 (3d Cir. 1993) ("A private contractor who is compelled by a contract to perform an obligation for the United States should, in some circumstances, share the sovereign immunity of the United States.") Feidt, on the other hand, did not consider the propriety of any alleged colorable defense at all; it dismissed an appeal from a remand order due to lack of appellate jurisdiction. Feidt, 153 F.3d at 128-29.

based on this policy rationale. On the contrary, other courts have repeatedly found removal appropriate where premised on a colorable government contractor defense. See, e.g., Winters, 149 F.3d at 400-01; In re "Agent Orange" Prod. Liab. Litig., MDL No. 381, 304 F. Supp. 2d 442, 450 (E.D.N.Y. 2004); Arness, 997 F. Supp. at 1272-73; Bahrs, 795 F. Supp. at 969; Reed, 995 F. Supp. at 712; Akin, 851 F. Supp. at 823; Fung, 816 F. Supp. at 573; Pack, 838 F. Supp. at 1103.

ExxonMobil's allegations and evidentiary submissions equally support colorable defenses under the Defense Production Act ("DPA"), and under the First and Second War Powers Acts. These Acts granted the President of the United States (and his designees) broad authority to require performance under contracts and orders deemed necessary to promote the national defense. See Eastern Air Lines, Inc. v. McDonnell Douglas Corp., 532 F.2d 957, 981-82, 993 (5th Cir. 1976); 50 U.S.C. App. \$2071 (DPA); Second War Powers Act, ch. 593, 56 Stat. 180 (1942); First War Powers Act, ch. 199, 55 Stat. 840 (1941). The Acts also contain exoneration provisions, relieving persons of liability incurred as a result of compliance with those contracts and orders. 50 U.S.C. App. § 2157 (DPA); Second War Powers Act, ch. 593, § 301, 56 Stat. 180 (1942); First War Powers Act, ch. 199, § 301, 55 Stat. 840 (1941); see also Eastern Air Lines, 532 F.2d at 997 (noting the "similarly worded exoneration provisions" of the DPA and its

predecessor acts). Accordingly, ExxonMobil's compliance with government-issued orders and contracts for the war effort during the 1940s and 1950s gives rise to a colorable defense under these Acts.

Plaintiffs acknowledge that ExxonMobil has asserted a colorable defense under the DPA. Citing Ryan, they reluctantly admit that "[s]ome courts have held that reliance on the Defense Production Act constitutes a colorable federal defense . . ."

(Bayway Remand at 11; Bayonne Remand at 11.) No doubt, if there were authority contrary to Ryan on that point, Plaintiffs would have cited it. But in fact the other courts that have addressed the issue agree with Ryan. See, e.g., Winters, 149 F.3d at 401; Crackau, 2003 WL 21665135, at *4; Arness, 997 F. Supp. at 1273.

As to the First and Second War Powers Acts, Plaintiffs argue that "there is no precedent for asserting that reliance on [those] Acts constitutes a 'colorable federal defense.'" (Bayway Remand at 11; Bayonne Remand at 11.) But those Acts are predecessor statutes to the DPA with similar exoneration provisions that provide a federal defense to certain claims. See Eastern Air Lines, 532 F.2d at 994, 998. There is no basis to distinguish them from the DPA in determining whether they support removal pursuant to 28 U.S.C. § 1442(a)(1).

D. There Is A Nexus Between Plaintiffs' Claims And ExxonMobil's Conduct Performed Under Color Of Federal Office.

The final element of the federal officer removal test requires a "causal connection" or "nexus" between Plaintiffs' claims and the directives of federal officers. See Winters, 149

F.3d at 398; Crackau, 2003 WL 21665135, at *5; Williams, 1996 U.S. Dist. LEXIS 22676, at *9-10. The connection here is plain. (See generally, Germann Decl. ¶¶ 4-90; Declaration of Sam McKenzie in Support of ExxonMobil's Opposition to Motion to Remand ("McKenzie Decl.") ¶¶ 9-13; Boyle Decl. ¶¶ 7-17; Affidavit of Fred A.

Westphal in Support of ExxonMobil's Opposition to Motion to Remand ("Westphal Aff.") ¶¶ 17-25; Weiss Decl. ¶¶ 5-11.) The evidence submitted with this opposition plainly shows the following:

- The tremendous increase in Jersey Works' production directed by federal officials during the War resulted in increased discharges of wastes to the receiving waters (e.g., Morses Creek, Arthur Kill, the Rahway River, and Upper New York Bay), onsite disposal facilities, and sludge and muck pits at Jersey Works. (McKenzie Decl. IN 9(a)-(dd); Westphal Aff. IN 17-19.)
- ExxonMobil re-commissioned old equipment during the War
 to meet production requirements mandated by federal
 officials. Some of the old equipment produced waste in
 greater quantities than more modern machines. Because
 ExxonMobil brought old equipment back on line, it

- otherwise been eliminated. (Germann Decl. ¶ 32.)
- Federal officials ordered continuous operations without periodic maintenance. That too led to additional discharges of contaminants because inadequate maintenance, for example, leads to leaky equipment. The additional discharges caused by lack of regular maintenance are directly attributable to the War and directives issued by government officials. (McKenzie Decl. ¶¶ 11(a)-(b); Westphal Aff. ¶¶ 20-23.)
- Works also increased discharges. For example, the switch from tankers to rail tank cars forced ExxonMobil to build temporary wooden loading/unloading racks without steel "catch-pans." Under ordinary (non-war) circumstances, those racks had steel pans below the cars to catch oil spills. During the War, the oil just spilled to the ground. (McKenzie Decl. ¶¶ 12(a)-(f); Boyle Decl. ¶¶ 10-17; Westphal Aff. ¶¶ 24-25.) Also, the government directed ExxonMobil to fill and transport fuel in five-gallon "blitz" cans (used to carry fuel on military vehicles). Smaller containers require more hose connections (and therefore more spills) and are

more susceptible to being overfilled. (McKenzie Decl. \P 12(g).)

Courts have consistently found that this sort of connection between federal control and the injury Plaintiffs allege is sufficient to establish nexus for purposes of removal pursuant to 28 U.S.C. § 1442(a)(1). See Winters, 149 F.3d at 398-400; In re "Agent Orange" Prods. Liab. Litig., 304 F. Supp. 2d 422, 450 (E.D.N.Y. 2004); Crackau, 2003 WL 21665135, at *5 (defendant need not show that government specifically instructed defendant to commit the alleged wrong; "it is enough to show that government guidelines and specifications controlled [defendant's] activities"); Williams, 1996 U.S. Dist LEXIS 22676, at *9-16; Pack, 838 F. Supp. at 1103; Fung, 816 F. Supp. at 572-73.

This case is legally identical to the situation addressed in Reed. There, plaintiffs alleged exposure to toxic chemicals at a synthetic rubber facility from 1944 through 1979. Reed, 995 F.

Supp. at 709. Operations at that facility (like many others) were conducted and directed by the federal government from 1944-55.

Id. at 708-09. Because the manner in which the defendant conducted its business (e.g., "the production, manufacture, transport, and testing of butadiene") is what allegedly caused the injury, and because that conduct was "overseen by the federal government to a very specific degree," the court held that a "nexus is present." Id. at 712.

E. Plaintiffs Have Misapprehended the Applicable Standard.

Plaintiffs' discussion of removal under 28 U.S.C. §

1442(a)(1) betrays a failure to understand the applicable standard, and a misinterpretation of the cases Plaintiffs cite.

Plaintiffs' fundamental error is their misreading of Gilberg v.

Stepan Co., 24 F. Supp. 2d 325 (D.N.J. 1998). They cite this case for the proposition that there is a five-factor test for whether injuries claimed by a plaintiff were undertaken at the direction of a federal officer for purposes of federal officer removal.

(Bayway Remand at 7; Bayonne Remand at 7.) But in fact neither the case nor the test Plaintiffs rely on has any applicability here.

The portion of <u>Gilberg</u> that Plaintiffs cite related solely to whether a corporation is "acting as an instrumentality or <u>agency</u> of the United States" and thus may be treated as a "federal agency" for purposes of the Federal Tort Claims Act ("FTCA"). <u>See Gilberg</u>, 24 F. Supp. 2d at 348-49; <u>Mendrala v. Crown Mortgage Co.</u>, 955 F.2d 1132, 1135-36 (7th Cir. 1992). This is made clear by a careful reading of <u>Gilberg</u> itself. The court used the five-factor test <u>only</u> to analyze whether the defendant could remove pursuant to Section 1442(a)(1) as a "federal <u>agency." Gilberg</u>, 24 F. Supp. 2d at 346-53. It considered separately whether the defendant could remove "on the more narrow ground that it was a 'person acting under' a federal officer," id. at 353-55, and when it did

so, it assumed that the test of federal officer removal was met, even though it had previously found that the five-factor test for federal agency removal was not. 24 F. Supp. 2d at 349-53, 353-54.

Gilberg thus clearly teaches that the "five-factor" test is not used to analyze federal officer removal. Since ExxonMobil does not contend that it was a federal agency subject to suit under the FTCA, the standard for FTCA removal is completely irrelevant here. Accordingly, the entirety of Plaintiffs' discussion derived from Gilberg has no relevance here. (Bayway Remand at 7, 9-10, 14-15; Bayonne Remand at 7, 9-10, 14-15.)

States v. Shell Oil Co., 294 F.3d 1045 (9th Cir. 2002), in which
Plaintiffs try to argue that the government did not exercise
significant control over Jersey Works. (Bayway Remand at 8-9 & n.
1; Bayonne Remand at 9 & n.1.) The trouble is that all the facts
in Shell, on which Plaintiffs rely as if they were true, were
stipulated, 294 F.3d at 1049, and that the case involved a
completely different issue from the one presented here, namely,
whether the defendants had liability under specific provisions of
CERCLA, id. at 1048. Stipulated facts in another case, involving
different parties and different legal issues, can have no weight
here as against the facts shown by evidence in the record. 12

¹² Plaintiffs also argue that the federal control here related only to the "production and distribution" of products and not to the "discharge" of hazardous substances. But that is not persuasive. (Bayway Remand at 9-10; Bayonne Remand at 10.) It

Finally, Plaintiffs rely on Arness v. Boeing North American, Inc., 997 F. Supp. 1268 (C.D. Cal. 1998), and Bahrs v. Hughes Aircraft Co., 795 F. Supp. 965 (D. Ariz. 1992). Both of these district court cases from the Ninth Circuit applied the wrong legal standard, holding that the removal statute should be "narrowly" construed, when under the Third Circuit law expressed in Sun Buick, it is to be broadly construed in favor of removal. Compare Sun Buick, 26 F.3d at 1262, with Arness, 997 F. Supp. at 1271, 1276, and Bahrs, 795 F. Supp. at 968. In any event, neither Arness nor Bahrs requires remand on the facts shown by this record. Arness involved neither a war nor the intense governmental oversight shown by the evidence here; it turned ultimately on the proposition that nothing prevented the defendant there from taking measures to avoid the pollution in issue. By contrast, during the War, ExxonMobil had no ability to respond to contamination concerns. It could not construct new facilities to deal with pollution concerns without permission from the WBP and an allocation of critical war materials. (Germann Decl. ¶¶ 66-73; Fairchild Decl. ¶¶ 5-9; Boyle Decl. ¶ 12.) Like much else in 1941-45, environmental concerns were subordinated to the war effort. Bahrs involved no showing of governmental oversight at all. Defendant pointed to the existence of a contract with the

was the federally-controlled production and distribution of products that caused the discharges, while federal control over all construction activities prevented action to limit or control the discharges.

government, but "made no showing as to the manner in which the contract was carried out." 795 F. Supp. at 970. Not surprisingly, the district court held the record insufficient. By contrast, the record here contains voluminous evidence showing direct and detailed control of ExxonMobil's operations by federal officers and a clear nexus to Plaintiffs' claims. 13

Plaintiffs' motion under 28 U.S.C. § 1447(c) was untimely. It follows that all defects in removal procedure, other than subject matter jurisdiction, have been waived. Subject matter jurisdiction, however, is clearly present here.

The locality and maritime connection tests of admiralty law are met, and the Court has subject matter jurisdiction in admiralty.

The existence of colorable federal defenses also gives the Court subject matter jurisdiction under the Supreme Court's decision in Mesa, since the federal officer removal statute, 28 U.S.C. § 1442(a)(1), is merely a removal statute and the subject

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Organization v. Honeywell International, Inc., 263 F. Supp. 2d 796, 855 n. 12 (D.N.J. 2003), for the proposition that a defendant's conduct can be "abnormally dangerous" under state law despite the fact that it has contracted with the Government. Honeywell is neither a removal case nor a federal officer case; while the case at bench involves no issue as to whether ExxonMobil's conduct was "abnormally dangerous." It is difficult to see what pertinence the footnote in Honeywell has to any legal issue presented on this motion.

matter jurisdiction that supports removal is found not in the statute but in the presence of a federal defense.

In addition, the discharges for which Plaintiffs seek relief occurred, at least in part, on property owned by the United States. Federal law governs that aspect of Plaintiffs' claims, and removal was and is proper on the basis of federal enclave jurisdiction.

Finally, removal on the basis of the federal officer statute was proper. During World War II, Exxon's operations at the Bayway and Bayonne Refineries were under the strict control of federal officers and agencies, and there is a clear and manifest connection between what Exxon was required to do and the discharges of contaminants for which Plaintiffs seek damages. For the reasons stated, Plaintiffs' motions to remand should be denied.

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UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND Civil Action No. 04-4897 (DMC)

Plaintiffs,

V.

EXXON MOBIL CORPORATION and AGC CHEMICALS AMERICAS, INC. f/k/a ICI AMERICAS, INC.

Defendants.

and

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND

Plaintiffs,

V.

EXXON MOBIL CORPORATION

Defendant.

I, CORNELIUS BOYLE, declare as follows:

 I reside at 8 Marion Court, Bayonne, New Jersey. I provide this declaration in support of Exxon Mobil Corporation's Opposition to Plaintiffs' Motion to remand.

Civil Action No. 04-4898 (DMC)

DECLARATION OF CORNELIUS BOYLE IN SUPPORT OF DEFENDANT EXXON MOBIL CORPORATION'S OPPOSITION TO PLAINTIFFS' MOTION TO REMAND

- 2. In the Fall of 1943, I began my employment with Standard Oil Company of New Jersey ("Standard Oil") at the Jersey Works consisting of the Bayway and Bayonne Refineries. While I worked at both Bayway and Bayonne throughout my career with Standard Oil, my first job with the company was as a Junior Clerk at Bayonne.
- 3. Later in 1943, I took military leave from Standard Oil and joined the United States Army and was ultimately was assigned to the 3rd Infantry Division. I was on Tour of Duty during World War II in Europe until 1946.
- 4. Upon completion of my Tour of Duty in 1946, I returned to Standard Oil in Bayonne in the clerical department initially and then transferred to Bayway working as a clerk.
- 5. In the Fall of 1946, I took an educational leave from Standard Oil and enrolled at Fordham University under Public Law 16 for disabled veterans and graduated with a B.S. in Chemistry in 1950.
- 6. Following my graduation in 1950, I returned to Standard Oil and held the following job titles until my retirement on July 1, 1985:
 - 1950 Chemist at the Bayway;
 - 1955 Engineer at the Bayway;
 - 1956 Assistant to the Vice President at Corporate Headquarters in New York City;

- 1957 Senior Engineer at the Bayway;
- 1958 Operations Supervisor of the Lube Oil Terminal at the Bayonne;
- 1960 Division Head of the Lube Oil Terminal at the Bayonne;
- 1973 Department Head of the Lube Oil Terminal and Wax/Packaging Operation and Laboratory at Bayonne;
- 1980 Member of the Plant Management Board at Bayonne.
- 7. In the Fall of 1943, when I began working for Standard Oil, the United States was in the midst of World War II and Standard Oil was producing great quantities of petroleum products such as aviation gasoline, fuel oil, lubes, waxes and other products for use by the United States Military.
- 8. The Jersey Works was considered a target for air strikes, so the Army defended the refineries with anti-aircraft artillery guns. One of these guns was mounted atop the old Main Office/Laboratory Building located on the southwestern part of the Bayonne Refinery, near the Platty Kill Creek. I knew one of the soldiers who manned the guns, Malcolm Holmes, who later became an employee at the Bayonne Refinery.
- 9. Tanker ships carrying crude and other petroleum products to and from the refineries were also targets. German U-boats off the Eastern Coast of the United States were sinking tankers, so the use of tankers, which was the normal mode of transporting

crude oil and petroleum products, became impractical.

Transportation of petroleum products was, therefore, mainly switched from tankers to rail tank cars and pipe lines, such as the Big Inch and Little Big Inch.

- 10. Bayonne, however, did not have the capacity to handle increased transportation of product by rail. Therefore, to accommodate the increased loading and unloading of product by way of rail tank cars, a temporary wooden loading/unloading rack was built. The loading/unloading rack was built on the eastern end of the Bayonne Refinery situated between two tank fields.
- 11. A loading/unloading rack is normally a large steel structure where the tank cars pull up, equipped with hoses that extend and connect to tank cars to transfer product between the tank cars and pipes leading to storage tanks. Loading/unloading racks generally have steel or concrete catch-basins below the tank car area to collect any leaks or other releases of product from equipment failures during transfers.
- 12. The wooden loading/unloading rack did not have any catchbasins. Rather, there was just loose dirt below the rack. This was likely so because steel and other metals were in such short supply due to allocation of such materials to the war effort. The shortage of steel was also why the loading/unloading rack was made of wood. Consequently, any spills or releases of

product that would normally be collected by the catch-basin would end up going into the ground.

- 13. My job as a Junior Clerk at Bayonne was to direct tank car traffic at the loading/unloading racks as they arrived carrying aviation gas components and crude oil for use by the military. The unloading of tank cars became a 24 hour-a-day operation during the war to keep up with the military's demand for petroleum products.
- 14. Because the crude and aviation gasoline components coming into Bayonne by tank car were dedicated to the war effort, the military had a full-time uniformed Naval Inspection Officer on site to monitor the quantity and quality of the product.
- 15. Considering the non-stop, daily transfer of product via hoses at the loading/unloading rack, petroleum products were released into the ground underneath the tank cars. Further, the opportunity for such releases of product to enter the ground was greatly increased because the rack was not equipped with catchbasins.
- 16. Moreover, on occasion tank cars came into Bayonne damaged or leaking product, which also contributed to contamination in this area.

17. Therefore, during World War II, and specifically during the time I worked at Bayonne as a Junior Clerk - - because tank cars became the primary mode of transporting crude oil, aviation gasoline components and other petroleum product to Bayonne - spills and leaks or other discharges of product occurred at or near the temporary loading/unloading rack. This loading/unloading rack did not exist prior to the war.

I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge.

CORNELIUS BOYLE

DATED: 12/15/04

17105v1

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND Civil Action No. 04-4897 (DMC)

Plaintiffs,

v..

EXXON MOBIL CORPORATION and AGC CHEMICALS AMERICAS, INC. f/k/a ICI AMERICAS, INC.

Defendants.

and

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND

Plaintiffs,

V.

EXXON MOBIL CORPORATION

Defendant.

Civil Action No. 04-4898 (DMC)

DECLARATION OF ROBERT E.
FAIRCHILD IN SUPPORT OF
DEFENDANT EXXON MOBIL
CORPORATION'S OPPOSITION TO
PLAINTIFFS' MOTION TO REMAND

- I, ROBERT E. FAIRCHILD, declare as follows:
 - 1. I reside at 1099 Sunny View Road, Mountainside, New Jersey. I provide this declaration in support of Exxon Mobil Corporation's Opposition to Plaintiffs' Motion to Remand.

- 2. I graduated from Steven Institute of Technology in

 June 1951 with a Bachelor of Science degree in Mechanical

 Engineering. I was hired by Standard Oil Company of New

 Jersey to work at its Bayonne Facility as an engineer-in
 training in the Mechanical Department. I received 8 months

 of training in equipment inspection.
- 3. After my training was complete, I was transferred to the Engineering Department and given the responsibility of requesting steel and other materials from a government agency called the Petroleum Administration of Defense ("PAD") whenever any modifications or repairs requiring these materials were needed at the Facility.
- 4. When I started this job, the Engineering Clerk maintained a black control book where requests for appropriations for various work to be done at the Bayonne Facility, including requests for appropriations made to the PAD. The black book contains numerous entries for requests for appropriations made to the government prior to my arrival, including those requests made during World War II.
- 5. During the early 1950s, steel and other precious metals were still in short supply because so much of it had been allocated to the military during World War II.

 Despite the war having been over for nearly six years when

- I started this job, the shortage still continued, so any allocation of materials remained on a priority basis.
- 6. Because of this restriction, machinery, equipment, tanks and the like frequently deteriorated or corroded and had to be put out of use until the PAD approved their repair or replacement. Moreover, because of the restrictions, expansion or modernization of the Facility was frequently deferred.
- 7. Later as Senior Staff Engineer for the Facility, while researching the Plant's history, I learned that during the War, the government only approved requests for construction or modification of the Bayonne Facility if it deemed it essential to the war effort or critical to civilian needs.
- 8. Specifically, I learned that in April of 1942,
 Standard Oil requested permission from the Government to
 build a rail tank car unloading rack at the Facility at an
 approximate cost of \$71,300. I also learned that Standard
 Oil made another request in May 1942 to build a rail tank
 car unloading rack at an approximate cost of \$45,000. Both
 specifically to avoid the German submarine menace.
 - Although unloading racks were built at Bayonne during the War, because of the shortage and restriction on steel,

the unloading racks were constructed of timber, rather than steel. The unloading racks also did not have any steel catch-pans below to contain any overfills, spills or leaks of oil, which are normally installed. It is likely that they did not install catch-pans also because of the restriction in steel.

10. These timber unloading racks were used to transfer crude oil and other petroleum products to and from storage tanks. They still existed when I started at Standard Oil in 1951.

I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge.

ROBERT E. FAIRCHILD

Robert E Frekeld

DATED: 16 DECEMBER 2004

17216v1

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND

Civil Action No. 04-4897 (DMC)

Plaintiffs,

V.

EXXON MOBIL CORPORATION and AGC CHEMICALS AMERICAS, INC. f/k/a ICI AMERICAS, INC.

Defendants.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION and ADMINISTRATOR, NEW JERSEY SPILL COMPENSATION FUND

Plaintiffs,

v.

EXXON MOBIL CORPORATION

Defendant.

Consolidated with:

Civil Action No. 04-4898 (DMC)

DECLARATION OF MARK S. GERMANN, ESQ. IN SUPPORT OF DEFENDANT EXXON MOBIL CORPORATION'S OPPOSITION TO PLAINTIFFS' MOTION TO REMAND

Pursuant to 28 U.S.C. § 1746, I, MARK S. GERMANN, Esq., declare and state as follows:

1. I am a member of the bar of the State of New York, admitted pro hac vice in this action, and one of the counsel for Exxon Mobil Corporation ("ExxonMobil") in this action. I submit

this declaration in support of ExxonMobil's Opposition to Plaintiffs' Motion to Remand.

- 2. The purpose of this declaration is to provide the Court with a clear and coherent summary of the contents of the documents designated as Exhibits 1 through 119 and included in the two separate volumes of exhibits filed with declaration. The exhibits are mainly historical documents that were gathered from archival sources by O'Melveny & Myers LLP and our co-counsel, Archer & Greiner. They show that ExxonMobil's operations at the Bayway Refinery in Linden, New Jersey and the Bayonne Refinery in Bayonne, New Jersey (generally known together as the "Jersey Works") were directed and controlled by the United States government during World War II, and that the federal government continued to control certain activities at the refineries even until the early 1970s. Also included as exhibits are various U.S. Coast Guard citations for spills by ExxonMobil and its predecessors into the navigable waterways near the Bayway Refinery and Bayonne Refinery.
- 3. The following foundational facts indicate that the exhibits to this declaration constitute admissible evidence:
 - a. Documents attached hereto, other than those described in subparagraphs (b) through (f) were obtained by

¹ Specifically, the two separate volumes are labeled, "Volume I: Exhibits 1 through 60" and "Volume II: Exhibits 61 through 119," and filed herewith.

me and persons working under my immediate direction and control, from the U.S. Government's National Archives located at 201 Varick Street, 12th Floor, New York, NY 10014 and 8601 Adelphi Road, College Park, MD 20740, and are true copies of documents in the National Archives. Accordingly, these documents are public records; each of the documents on its face is more than 20 years old.

- b. Exhibits 4, 6, 7, 28, 34, 109, and 111 are true and correct copies of extracts from published books, journals, magazines and periodicals; each of the documents on its face is more than 20 years old.
- and correct copies of documents that were obtained by me and persons working under my immediate direction and control from archives of historical materials maintained by ExxonMobil pursuant to its ordinary document retention policy. I have examined each of the documents, and I have found no sign of any alterations or modifications to the documents, or any reason to believe that each document is not what it purports to be. Each of the documents on its face is more than 20 years old.
- d. Evidentiary foundation for Exhibits 1 and 2 is provided in the declaration of Len C. Racioppi filed herewith.

- e. Evidentiary foundation for Exhibits 49 and 99 is provided in the declaration of David K. Johnson filed herewith.
- f. Exhibits 112 through 117 are public records produced by the U.S. Coast Guard.

I. HISTORY OF THE JERSEY WORKS

- 4. Between 1909 and 1993 ExxonMobil and its predecessors in interest operated a refinery and related petrochemical and other facilities on approximately 1,300 acres in Linden, New Jersey, generally known as the Bayway Refinery. In 1993, the Bayway Refinery consisted primarily of "a refinery, two chemical plants, tank fields," and a distribution station." The eastern waterfront area of the Bayway Refinery borders the navigable Arthur Kill. Morses Creek, which is subject to the influence of the tides, also flows through the Bayway Refinery before discharging into the Arthur Kill. Various areas on the site also drain into the surface waters of the Rahway River and Piles Creek.²
- 5. Between 1877 and 1972, ExxonMobil and its predecessors in interest also operated a refinery and related petrochemical and other facilities on a site in Bayonne, New Jersey, generally known as the Bayonne Refinery. The Bayonne Refinery is located

² Bayway Refinery Site History Report, Vol. 1, at ¶¶ 1.2, 1.3, 2.2 (Feb. 1993), relevant sections designated as Exhibit 1.

adjacent to the navigable waters of the Kill Van Kull and Upper New York Bay. At the peak of operations in 1936, the Bayonne Refinery occupied 605 acres of land on the "Constable Hook."

6. During much of the period from 1909 to 1972, and in particular throughout the 1930's, 1940's and 1950's, the Bayonne Refinery and the Bayway Refinery were interconnected by pipelines and operated as a single, integrated refinery and petrochemical facility, generally known as the Jersey Works, operated by the Standard Oil Company of New Jersey ("SONJ"). The 1954 "Refinery Operations" manual for Bayway stated that the Bayonne and Bayway refineries "are operated as a single unit" and that "Bayway is operated chiefly for the production of gasoline, heating oil, and fuel oil; whereas Bayonne's operations are suited to production of lube oils, waxes, and asphalts."4 It also indicated that the two refineries were connected by four inter-refinery pipelines transferring lube oils and waxy distillates to Bayonne, and naphthas and gas oils from Bayonne and Bayway."5

³ Bayonne Plant Site History Report, Vol. 1, at ¶¶ 1.2, 2.1, 3.1 (Nov. 1994), relevant sections designated as Exhibit 2. Platty Kill Creek is also a navigable waterway located within and adjacent to the Bayonne Refinery. Id. at \P 2.1.

Esso Standard Oil Company Bayway Refinery, Refinery Operations, at 9 (1954), relevant pages designated as Exhibit 3.

⁵ Id.

- 7. In 1940, the Oil and Gas Journal commented on the successful integration of the Jersey Works into a single, integrated refinery: "The Bayway and Bayonne refinery sites have been practically merged into one over a period of years. The Bayway refinery has been the proving ground for several Standard of New Jersey processing developments, including hydrogenation, catalytic cracking and reforming, polymerization, alkylation, isomerization, and solvent refining of lubricating oils."
- 8. A 1942 letter from SONJ to the Office of Petroleum Coordinator during World War II demonstrates the interconnectedness of the Jersey Works. In the letter, SONJ requested authorization to change a construction project originally scheduled for the Bayway Refinery to the Bayonne Refinery:

Our Manufacturing Committee recently decided that it will be necessary to relocate at Bayonne Refinery one of the two 5,000 bbl. isopentane spheroids originally proposed for Bayway Refinery in the above Aviation Gasoline Project. ... It has now developed that our Bayonne Refinery will be the principal blending and shipping point for Bayway Refinery's production of base stock and isopentane. Tankage, blending and shipping facilities for aviation fuels which do not exist at Bayway are available at Bayonne. The use of these facilities will

⁶ "Refinery Expansion," Oil and Gas Journal, at 35 (Aug. 22, 1940), relevant pages designated as Exhibit 4.

avoid considerable new construction and use of critical materials.

II. HISTORY OF THE PETROLEUM ADMINISTRATION FOR WAR AND THE WAR PRODUCTION BOARD

- 9. The exhibits to this declaration show that during the period from May 28, 1941 through August 15, 1945, the day after the surrender of Japan, the operations of the Jersey Works were entirely directed and controlled by the officers of the Petroleum Administration for War ("PAW"), the War Production Board ("WPB"), and other agencies of the United States.
- 10. In anticipation of the United States' involvement in WWII and in order to coordinate all national defense activities concerned with the production, refining, transporting and marketing of petroleum, on May 28, 1941, President Roosevelt created the Office of the Petroleum Coordinator for National Defense, later renamed the Office of Petroleum Coordinator for War (hereinafter, the "OPC"). The OPC was the predecessor to

May 8, 1942 Letter from J. M. Sitler, Purchasing Agent, SONJ, to Mr. Wright W. Gary, Director of Refining, Office of Petroleum Coordinator, designated as Exhibit 5.

the PAW, which was created on December 2, 1942 by Executive Order No. 9276.8

- 11. The OPC (and later, the PAW) was organized into geographic districts headed by District Directors, whose duties were to oversee the production of petroleum products for the war, including:
 - 1. To carry out Recommendations of OPC and Orders of the War Production Board as specifically delegated.
 - 2. To direct and assist with cooperative actions of the oil industry as specifically authorized in Recommendations of OPC and Orders of the War Production Board.
 - 3. To inspect and investigate oil industry operations with respect to conformance with Recommendations and Orders; to advise the Washington Office of findings.
 - 4. To collect, compile, analyze, and interpret any or all information related to petroleum in the district; to transmit such information to the Washington Office with recommendations.
 - 5. To recommend to the Washington Office any adjustments in the operations, methods, or practices in the oil industry indicated by the facts as desirable to meet local conditions and to effect optimum utilization

⁸ See May 28, 1941 Letter from President Roosevelt to the Secretary of Interior, Executive Order No. 9276, 7 FR 10091, Executive Order No. 9319, 8 FR 3687, and Executive Order No. 9718, 11 FR 4965, as reprinted in J.W Frey, A History of the Petroleum Administration for War 1941-45, at 374-78 (G.P.O. 1946) (hereinafter, "PAW History"), relevant pages designated as Exhibit 6. On May 31, 1941, President Roosevelt appointed Secretary of Interior, Harold L. Ickes, to the position of Petroleum Coordinator for National Defense. Henry D. Ralph, "Steps in Transition to Wartime Economy," Oil and Gas Journal, v. 40, No. 38, 188 (Jan. 29, 1942), designated as Exhibit 7.

of resources, facilities, products, and services in the Nation's war effort.9

12. President Roosevelt's December 2, 1942 Executive Order No. 9276 established the PAW, with the Secretary of Interior, Harold L. Ickes, serving as the "Petroleum Administrator." This Executive Order stated that PAW's responsibilities were to organize and direct the petroleum industry in the interest of national defense:

The Administrator shall ... establish basic policies and formulate plans and programs to assure for the prosecution of the war the conservation and most effective development and utilization of petroleum in the United States and its territories and possessions, necessary policy and operating directives to parties engaged in industry, petroleum and appoint general, regional, local or functional petroleum industry committees or councils as the Administrator finds necessary 11

The same Executive Order gave the Petroleum Administrator the authority to issue and take appropriate action to enforce "such orders or directives to the petroleum industry, as the Administrator may deem necessary, in order to: (1) Provide adequate supplies of petroleum for military, or other essential uses; or (2) Effect the proper distribution of such amounts of

Feb. 10, 1942 Memo from Ralph K. Davies, Deputy Petroleum Coordinator, designated as Exhibit 8.

¹⁰ Executive Order No. 9276, ¶ 2, included as Exhibit 6.

¹¹ Id., ¶ 3(a), included as Exhibit 6.

materials as the Chairman of the War Production Board may allot for the use of the petroleum industry."12

- 13. In addition to the instructions of the PAW, refiners, including the Jersey Works, were subject to the allocation and priority requirements administered by the WPB. 13 President Roosevelt created the WPB by Executive Order No. 9024 on January 16, 1942. 14 The main responsibility of the WPB was to establish the policies, plans, procedures, and methods with respect to war procurement and production of petroleum. 15
- 14. Executive Order No. 9276 required the PAW Administrator to analyze estimates of the amounts and types of

¹² Id., ¶ 3(d) (emphasis added); see also July 1, 1943 Letter from Donald M. Nelson, WPB Chairman, to Hon. Harold L. Ickes, PAW Administrator, Hon. Prentiss M. Brown, Office of Price Administration Administrator, and Hon. Joseph B. Eastman, Office of Defense Transportation Director, designated as Exhibit 9 ("The maintenance of an adequate supply of petroleum products in the amounts, and at the locations, necessary to meet rationed and other allocated demands, will continue to be the primary responsibility of the [PAW]."). President Truman terminated the PAW on May 3, 1946. See Executive Order No. 9718, 11 FR 4965, included as Exhibit 6.

Executive Order No. 9024, 7 FR 329, designated as Exhibit 10. A July 1, 1943 letter of understanding explains an agreement between the PAW and WPB with respect to their respective duties and the interaction between the two agencies. July 1, 1943 Letter from Donald M. Nelson, WPB Chairman, to Hon. Harold L. Ickes, PAW Administrator, Hon. Prentiss M. Brown, Office of Price Administration Administrator, and Hon. Joseph B. Eastman, Office of Defense Transportation Director, designated as Exhibit 9. The WPB consisted of a "Chairman, to be appointed by the President, the Secretary of War, the Secretary of the Navy, the Federal Loan Administrator, the Director General and the Associate Director General of the Office of Production Management, the Administrator of the Office of Price Administration, the Chairman of the Board of Economic Warfare, and the Special Assistant to the President supervising the defense aid program." Executive Order No. 9024, 7 FR at 329-30, designated as Exhibit 10.

¹⁴ Id.

¹⁵ Executive Order No. 9276, ¶ 3(c)(1), included as Exhibit 6.

petroleum required by various branches of the federal government to meet military, industrial, and civilian requirements and to submit those estimates to the WPB with recommendations for the allocation of petroleum to meet those requirements.¹⁶

15. During the time that the PAW and WPB directed the activities of the Jersey Works, the refineries were owned and operated by SONJ, a predecessor in interest to ExxonMobil:

III. FEDERAL GOVERNMENT CONTROL OVER THE JERSEY WORKS DURING WORLD WAR II

- A. The PAW and Other Government Agencies Issued Daily Orders and Directives to SONJ Regarding the Production of Petroleum Products
- 16. Throughout its existence, the PAW issued orders, directives and almost daily instructions to all refiners, covering every aspect of refinery operations. "The PAW 'recommendations' had the force of directives but the form of recommendation was maintained." In fact, while directions from the PAW were often couched in terms such as "request" or

Directive No. 59, September 25, 1942, from Harold L. Ickes, at 1-2, designated as Exhibit 11 ("The Director of Refining, Office of Petroleum Coordinator for War, shall furnish to the Director of Petroleum Supply, on or before the 20th day of each month, a suggested monthly schedule for the succeeding month assigning among the several refineries in District One the crude petroleum to be shipped into District One and showing the monthly quantity and the quality of the Principal Petroleum Products to be manufactured at each refinery in District One during such month.")

¹⁷ Brendan J. O'Callaghan, The Role of Defense Supplies Corporation in the Wartime Aviation Gasoline Program, at 79 (1948) (hereinafter, "The Role of DSC"), relevant pages designated as Exhibit 12.

"prefer," SONJ and other refiners were acutely aware of their obligation to fully support the war effort by complying with PAW instructions. For example, from time to time, the PAW would "request" that SONJ purchase a certain amount of crude, but these marching orders were specific and expected to be followed, as they were made under the "authority" of other directives. 18

17. The first major way that the PAW controlled operations at the Jersey Works was by imposing quotas on crude oil supplied to the refineries. On September 25, 1942, the PAW issued Directive 59 in order "to secure ... the greatest possible volume of petroleum products ... and to insure a fair distribution of the available supply among all suppliers in" the East Coast. 19 In effect, the PAW used Directive 59 to fix quotas for each petroleum supplier and required distribution of crude oil according to those quotas. 20 For example, SONJ's supply of crude oil was capped at 20,585 barrels per day for the month of February 1943. 21

¹⁸ Feb. 14, 1943 Letter from J.R. Parten, PAW Director of Transportation, to Chester F. Smith, President, SONJ, designated as Exhibit 13.

¹⁹ July 22, 1943 Letter from Harold L. Ickes, PAW, to Hon. Charles R. Clason, House of Representatives, designated as Exhibit 14.

²⁰ Id.

²¹ PAW Petroleum Administrative Order No. 1, as amended Feb. 1, 1943, Schedule A, designated as Exhibit 15 (the Jersey Works were located in the area designated by the PAW as "District One - Zone Two").

- 18. If SONJ failed to meet the government's expectations, the company would be called to task. As an example, in October 1943, the PAW asked SONJ to explain a decrease in its daily average crude runs at Jersey Works.²²
- 19. At the direction of the PAW, the Jersey Works greatly increased their level of production between 1941 and 1945. For example, in September 1943, SONJ informed PAW that SONJ was adhering to PAW's directions: "As requested we have scheduled the refineries of [SONJ] ... to produce maximum war products and to adhere as closely as possible to your suggested increased production of motor gasoline and distillate fuel and decreased residual fuel."²³
- 20. An April 23, 1943 letter from PAW's District One office provides a specific example of how refinery operations were affected by PAW directives, which were often sent by telegram or night letter to ensure that refineries would respond as quickly as possible to the government's demands. The letter focused on restrictions on the aviation and motor gasoline production. According to the letter, four telegrams were issued. The first two, for which no date is given, called for production increases; the third, "released" on July 7, 1941,

Oct. 21, 1943 Letter from G. H. Mettam, PAW Director of Refining, District One, to Chester F. Smith, President, SONJ, designated as Exhibit 16.

²³ Sept. 1, 1943 Telegram from Chester F. Smith, President, SONJ to E.D. Cumming, PAW Director of Refining, designated as Exhibit 17.

"called for a reduction;" and the fourth, dated November 18,
1941, "canceled all previous telegraphic instructions and
requested that refinery operations be regulated strictly in
accord with a schedule prepared by the Refining Committee of
District I for November only."²⁴

21. The ever-changing needs of the government often required SONJ to alter its operations at a moment's notice, in many cases without regard to considerations of time, expense, or efficiency:

One of the wartime conditions which served to harass refiners as much, perhaps, as anything else was the frequent need to change yields so as to produce, at all times, the maximum quantities of the mostneeded products. ... One day, refiners would have instructions from PAW to increase their yields of gasoline and cut down their yields of fuel oil. On another occasion, the evershifting requirements of war might call And, adding to for exactly the opposite. the difficulty, the orders often had to be dispatched in the form of telegrams, calling for the changes to be made overnight.25

22. For example, in November 1943, the PAW issued a directive via night letter requiring refiners not to manufacture or blend certain types of gasoline. The letter provided that if it was "impossible for you to comply with this directive, or

 $^{^{24}}$ April 23, 1943 Letter from C.B. Gale to D.P. Bailey, designated as Exhibit 18.

²⁵ PAW History, at 219, included as Exhibit 6.

[if] it will work an exceptional and unreasonable hardship, you may apply for a 30-day exception"²⁶ The PAW did grant SONJ an exception because compliance would have caused SONJ unreasonable hardship.²⁷ Even so, the PAW granted the exception on the specific condition that during the 30-day exception period, SONJ would "make every effort to effect such exchanges or sales as are necessary to permit [SONJ] to comply fully with the volatility and octane requirements as stated in our directive."²⁸

23. Furthermore, where products were deemed essential to the war effort (as was normally the case with refined products used for blending or manufacture of other products), the PAW determined to whom the products would be sold, or directed that they be transferred to another refiner for further processing. For instance, the PAW Director of Transportation "requested"

Nov. 2, 1943 Night Letter from G. H. Mettam, PAW Director of Refining, District One, to Companies including SONJ, designated as Exhibit 19.

²⁷ Nov. 8, 1943 Letter from G. H. Mettam, PAW Director of Refining, District One, to Chester F. Smith, President, SONJ, designated as Exhibit 20.

²⁸ Id. SONJ later requested an extension to the exception period, as it was still attempting to effect the appropriate exchanges. See Dec. 29, 1943 Letter from Chester F. Smith, SONJ, to H. W. Dodge, PAW Director in Charge, District One, designated as Exhibit 21. One month later, SONJ wrote a letter to inform the PAW of its efforts to comply with government directives: "Over the past several months we have made an earnest effort to adjust our refinery operations to full compliance with P.A.W.'s desires as evidenced by [its] directives ..., and regret that we have been forced to request certain exceptions when full compliance appeared impossible." Jan. 26, 1944 Letter from Chester F. Smith, SONJ, to H.W. Dodge, PAW District Director in Charge, designated as Exhibit 22.

that, during the month of February 1943, SONJ purchase 120,000 barrels of crude from War Emergency Pipelines in Illinois.²⁹

- 24. The PAW also controlled how the specific products were manufactured. For instance, in October 1943, the PAW required refiners of blended aviation gas, such as the Jersey Works, to blend specified products according to the PAW's blending specifications.³⁰
- 25. As yet another example of the PAW's directives requiring an increase in production, in June 1944, the PAW sent a telegram to all producers of 100-octane aviation gasoline, telling them to "[p]lease push as hard as you possibly can" in order to meet the military's need for fuel over the next two to three months, which was 50% more than originally estimated.³¹
- 26. The PAW expected SONJ to respond immediately to its urgent orders, regardless of the fact that directives could last only a month, or even just a few days, before the PAW replaced them with new orders based on changes in war needs. For

Feb. 14, 1943 Letter from J.R. Parten, PAW Director of Transportation to Chester F. Smith, President, SONJ, designated as Exhibit 13.

Oct. 1943 Letter from E. D. Cumming, PAW Director of Refining to All Potential Blenders of Grade 98/130 Aviation Gasoline, designated as Exhibit 23. (A distribution list was not attached to the attached letter, which was located at the National Archives in New York. It is, however, reasonable to conclude that this letter was sent to SONJ.)

June 17, 1944 and June 21, 1944 Telegram from Bruce K. Brown, PAW Assistant Deputy Petroleum Administrator, designated as Exhibit 24. (The distribution list was not attached to the attached telegram, which was located at the National Archives in New York. It is, however, reasonable to conclude that this letter was sent to SONJ.)

example, in July 1945, the PAW directed all manufacturers to, "effective immediately ... blend all current production Grade 100/130 aviation gasoline with a maximum of 4.0 instead of 4.6 cc [tetraethyl lead] per gallon."³² This was described as an "emergency directive" and was to be in effect for the month of August only.³³ However, the PAW followed up that telegram about three weeks later with the following directive: "Effectively immediately you may, and we prefer that you do, alter blending procedure to use 4.6 cc [tetraethyl lead] per U.S. gallon instead of 4.0."³⁴

27. The PAW also required refineries to limit their use of steel and other metals because of their scarcity. Already in 1941, the OPC recommended that refiners store petroleum products in wood, glass, paper, and other materials:

The needs of the defense program of the United States for steel and other metals are so urgent and in excess of the available supply that the petroleum industry must make more steel and other metals available for such defense needs by conducting its operations in such manner as to use the minimum quantity of steel and other metals and by using substitute materials wherever and whenever possible. Such needs are so great that the allocation of steel to drum

July 24, 1945 Telegram from A. P. Frame, PAW to Carleton J. Everett, PAW Director of Refining District I, designated as Exhibit 25 (emphasis added).

³³ Id.

³⁴ Aug. 15, 1945 Telegram from P. J. Byrne, Jr., PAW to Carleton J. Everett, PAW Director of Refining, District 1, designated as Exhibit 26.

manufacturers has already been reduced to third and the requirements of companies constitute about 57% of the normal production of the drum manufacturers. It is also necessary to curtail the use of tin cans, tubes, and other metal containers now being employed in the distribution petroleum and its products. Wood, glass, paper, and other materials offer practicable substitutes for steel, tin, and other metal manufacturers containers and the containers from such substitutes position to accept orders and make immediate shipments of wood barrels and of reasonable containers within a THEREFORE. the President's pursuant to letter of May 28, 1941 establishing the Office of Petroleum Coordinator for National Defense, I do hereby recommend that immediately and until further §1507.1 Steel and other metal containers not to be used. All persons in the petroleum industry shall discontinue the use of steel, tin, and other metal containers, including but not limited to drums, cans, and tubes for petroleum or petroleum products to the greatest possible degree and substitute therefor containers made of wood, paper, glass, or other materials which available.35

Wooden and glass containers, of course, were more likely to produce leaks and other discharges than the metal containers otherwise in use.

28. "In addition, Jersey's refineries at ... Bayway and Bayonne, N.J. ... had certain obsolete equipment. ... This equipment was capable of producing perfectly satisfactory products but at a cost higher than that of more modern equipment. Instead of

Recommendation No. 14, Oct. 25, 1941, from R. K. Davies (emphasis added), designated as Exhibit 27.

being scrapped it had been retained as stand-by equipment and, when the urgent need for increased output developed in 1943, it was placed back into operation."³⁶ Use of obsolete equipment to "produce maximum war products" also had the likely consequence of increasing the production and discharge of petroleum wastes.

B. The PAW's Control Over SONJ Extended to Specific Products

29. SONJ produced a wide variety of products that were vital to the war effort, including 100-octane aviation gasoline, 80-octane fuel, Navy Special fuel, isopropyl alcohol and wax. In fact, the U.S. government relied on SONJ for nearly one-sixth of its aviation gasoline, which was one of the most vital petroleum products produced during the war.³⁷

³⁶ Charles Sterling Popple, Standard Oil Company (New Jersey) in World War II (1952) (hereinafter, "WWII History"), at 84-85, relevant pages designated as Exhibit 28.

³⁷ Nov. 27, 1942 Letter from Ralph K. Davies, PAW Deputy Petroleum Coordinator, to Hon. Julius H. Amberg, Special Assistant to the Secretary of War, designated as Exhibit 29.

30. The PAW determined whether and how much aviation gasoline, motor gasoline, lubricants and other petroleum products would be produced from each barrel of crude oil. For example, a July 7, 1942 letter from the PAW to several refiners, stated:

Until further notice your average motor gasoline yield be held to 43.4 percent from all crudes except Pennsylvania type and foreign crudes. Request that your average motor gasoline yields from Pennsylvania type and foreign crudes be held to eighty percent of your average yield from crude for last six months of 1941. Corresponding increase in other products should be distributed equally over distillate and residual fuels. This request does not apply to an extent that would reduce your maximum output of critical war products, as toluene, special lubricants, 100 and 91 octane military aviation gasoline and components thereof, petroleum coke, petroleum organic chemicals, aromatic solvent naphthas, sulfonates, butadiene, acid, naphthenic greases, paraffin wax, transformer oil, or asphalt for war requirements.39

31. Towards the end of World War II, in early 1945, the Bayway refinery was "running approximately 100,000 B/D of crude and operating cracking units to the extent of 90,000 B/D of capacity. The plant [was] producing 10,000 B/D of 100 octane

³⁸ See PAW History at 219, included as Exhibit 6; see also Jan. 30, 1942 Letter to Mr. Wm. C. Huff, OPC from J.M. Sitler, SONJ, designated as Exhibit 30 (indicating that "[d]emands for additives used in the manufacture of products going to war plants in the Army and Navy are considerably in excess of those of 1940").

July 7, 1942 Night Letter from Ralph K. Davies, Deputy Petroleum Coordinator, to SONJ and other refiners, designated as Exhibit 31.

aviation gasoline, 80 octane motor gasoline, Diesel fuel, Navy fuels, acetates and alcohols, all essential war products"⁴⁰ Total throughput for the Jersey Works in 1941 was approximately 95,000 barrels per day and by 1945 it was 159,000 per day, an increase of 67%.⁴¹

1. Aviation Gasoline

32. Of all the petroleum products produced at the Jersey Works, the PAW was most concerned with increasing production of 100-octane aviation gasoline, which was in critically short

⁴⁰ Feb. 1945 WPB Recommendation, Serial No. 136408, designated as Exhibit 32; see also June 21, 1943 Letter from Chester F. Smith, President, SONJ to Robert H. Colley, PAW Chairman, Refining Committee District No. 1 and June 22, 1943 Letter from Colley to E. D. Cumming, PAW Director of Refining, included as Exhibit 33 (discussing Jersey Works' capacity to produce Navy diesel fuel); see also Henry D. Ralph, "Close Cooperation Within Industry Has Made Possible Its Wartime Achievements," Oil and Gas Journal, at 288 (Mar. 31, 1945), relevant pages designated as Exhibit 34 ("the refining industry had to modify its practices to meet military specifications and turn out other items on the list of petroleum war products such as aviation gasoline components, Navy special diesel fuel, aviation lubricating oil, special marine and ordnance greases and lubricants, 80-octane all-purpose military gasoline, special naphthas, petroleum coke, microcrystalline wax, and many Most spectacular accomplishment of all was the increase in production of 100-octane aviation gasoline from a capacity of 40,000 bbl. per day prior to the war to close to 600,000 bbl. per day currently. ... This construction cost approximately \$760,000,000 of which \$550,000,000 was spent by private industry and \$210,000,000 by the Government ...")

⁴¹ WWII History at 93, included as Exhibit 28.

supply and vitally necessary for the war effort. In addition to establishing the specifications for blending of aviation gas, the PAW also directed the Jersey Works to do whatever possible, without regard to economics or efficiency, to maximize production of 100-octane aviation gasoline. The Government's demands for maximum production of aviation gasoline increased throughput enormously, required the use of old equipment, and naturally increased the production and discharge of petroleum wastes parallel with the desired increase in production.

33. In August 1941, the OPC issued the following recommendation with regard to specifications for blending of 100 octane aviation gas:

All persons, natural or artificial, engaged directly or indirectly in the production or manufacture of aviation gasoline or in the production or manufacture of gasolines

^{**2 &}quot;100 octane aviation gasoline manufacture should take precedence over the manufacture of other petroleum products excepting those required for special defense needs." Petroleum Industry Committee for National Defense, "Minutes of the Committee on Refining District No. 1," at 14 (Aug. 20, 1941), relevant pages designated as Exhibit 35. On December 11, 1941, "[t]hrough an OPC recommendation, the Government took complete control of the aviation gasoline industry." Henry D. Ralph, "Steps in Transition to Wartime Economy" Oil and Gas Journal, v. 40, No. 38:188 (Jan. 29, 1942), designated as Exhibit 7. The 100-octane projects were so important that the Army-Navy Munitions Board tried to make sure that the refineries received enough steel for the new construction projects. See OPC "100-Octane Aviation Gasoline Report to the Supply Priorities and Allocations Board," at 8 (Jan. 15, 1942), relevant pages designated as Exhibit 36.

The Role of DSC at 69-70, included as Exhibit 12. "Despite the heavy increase in the production of 100-octane aviation gasoline through 1942, 1943, and into 1944, it was never sufficient to satisfy all demands. Supplies were absorbed as quickly as they became available, making it impossible to establish any sizable reserves. In the middle of April, 1944, the PAW announced that the demand for additional supplies of 100-octane gasoline was becoming critical." WWII History, at 45, included as Exhibit 28.

containing blending agents of a petroleum origin, such as but not limited to, Iso-octanes including alkylates, hot acid octanes, and hydrocodimers, Iso-pentanes, and Neo-hexanes, cease to use such blending agents except for the production and manufacture of 100 octane aviation gasoline or such other aviation gasoline as may hereafter be recommended by the Office of the Petroleum Coordinator.44

- 34. In October 1941, the OPC began a "program to triple the nation's capacity to produce 100-octane gasoline." 45
- 35. In July 1943, the PAW continued to stress the importance of aviation gas in a wire to SONJ and other refiners, acknowledging the resulting "uneconomic operations":

The shortage of aviation gasoline is increasingly critical, and if we are to meet the requirements for military operations ... we must produce every possible gallon from all our nation's refineries. I know that maximum production may often result in uneconomic operations. ... I stress that the

Aug. 22, 1941 Recommendation No. 8 from R.K. Davies, Acting Petroleum Coordinator for National Defense, designated as Exhibit 37. "One-hundred octane aviation gasoline is of paramount importance in increasing the power output of our airplane engines, improving the maneuverability of our fighters, and extending the cruising radius of our bombers. It has been estimated that some 25 percent increase in power can be obtained through the use of 100-octane gasoline as compared with 91." OPC, "100-Octane Aviation Gasoline Report to the Supply Priorities and Allocations Board" (Nov. 18, 1941), at 3, relevant pages designated as Exhibit 38.

Henry D. Ralph, "Steps in Transition to Wartime Economy," Oil and Gas Journal, v. 40, No. 38:188 (Jan. 29, 1942), designated as Exhibit 7. In fact, the Jersey Works' research organization "succeeded in working out a method of hydrogenating di-isobutylene into a fuel which rated 100 on the octane-rating scale. Di-isobutylene, which is formed through the condensation of two molecules of isobutylene formed in oil cracking operations, upon hydrogenation produces hydrogenated di-isobutylene, variously known as hydro-octane, hydro-dimmer, or commercial iso-octane. Since isobutylene exists only in small amounts in refinery gases, the quantity of 100-octane fuel which could be produced was limited." WWII History, at 21, included as Exhibit 28.

one program which must take precedence over all others is that of producing the maximum quantity of aviation gasoline and components thereof. 46

- 36. Again, in May 1944, the PAW "requested by telegram that [SONJ] and [its] employees exert every effort to meet or exceed [its] estimate of aviation gasoline component production for the period May, June and July"
- 37. One month later, the WPB deemed it necessary to be "in continuous contact, both in person and by telephone and telegraph with all manufacturers" regarding the government's need for increased production of aviation gasoline.⁴⁸
- 38. In July 1944, the PAW issued the following directive in order to control distribution of aviation-grade base stock, blending agents, and high-octane aviation fuel:

The [PAW] instructs industry with respect to specifications for the types and grades of high-octane aviation fuel which shall be manufactured blended in or commercial production. For the manufacture or blending of any other grade or type of fuel, such as experimental fuels, specific authorization must be obtained from the [PAW]. The [PAW] and the Aviation Petroleum Products Allocation Committee exercise joint control over all deliveries, petroleum industry to consumers (or their

⁴⁶ July 26, 1943 Day Letter from Harold L. Ickes, PAW to Chester F. Smith, President, SONJ, and other refiners, designated as Exhibit 39.

⁴⁷ Sept. 21, 1944 Night Letter from A. P. Frame, PAW Director of Refining to W. F. Thiede, SONJ, and other refiners, designated as Exhibit 40.

⁴⁸ July 10, 1944 "Aviation Gasoline Report to the War Production Board," at 10, relevant pages designated as Exhibit 41.

agents), of blending agents, aviation-grade base stock, and high-octane aviation fuel."49

- 39. A November 1944 PAW telegram, which was sent to all 100-octane producers, described a shortage of aviation gasoline and went on to state: "To meet this shortage we urge you immediately review your operations to determine what facilities might be installed your plant to remove bottlenecks or otherwise increase production rapidly." 50
- 40. In addition, the Jersey Works added 4.6 cc. of tetraethyl lead to each gallon of aviation gas produced in order to achieve the 100 octane rating, although gasoline produced at Jersey Works before 1941 included no more than 3 cc. of lead per gallon. Tetraethyl lead is a toxic contaminant; and the more lead that was used, the more that spilled or was discharged.

⁴⁹ Directive 77, July 24, 1944 by Ralph K. Davies, designated as Exhibit 42.

Nov. 25, 1944 Telegram from A. B. Culbertson, PAW Assistant Director of Refining, to Carleton J. Everett, PAW Director of Refining, District I, designated as Exhibit 43.

⁵¹ See supra at ¶ 26. Originally 100-octane aviation gas was produced using 3 cc. of tetraethyl lead, but "on December 13, 1941, specifications were changed to call for 4 cc. On July 28, 1943, specifications were further altered to call for 4.6 cc. ... W.S. Farish, in his letter of December 28, 1940, stated that the Jersey [Works] had found it satisfactory to increase the tetraethyl lead content to 4.5 cc per gallon of gasoline." WWII History, at 36, included as Exhibit 28; see also id. at 32. The Aeronautical Board originally authorized the use of 4 cc. per gallon of tetraethyl lead, instead of 3 cc., in order to permit the production of at least 15 percent more aviation gas than could be made at the 3 cc. specification. See PAW, "100-Octane Gasoline Report to the [WPB]," at 11 (April 20, 1942), relevant pages designated as Exhibit 44; "100 Octane Aviation Gasoline Report to the [WPB]," at 6 (Feb. 16, 1942), relevant pages designated as Exhibit 45.

- 41. In March 1945, the PAW's demand for and control over SONJ's aviation gas continued. For example, the PAW granted SONJ an exception to PAW Directive 75 in order to allow SONJ to divert "excess BB fractions" to produce "motor gasoline, liquefied petroleum gas, or fuel," but only "until such time as a disposition is provided which will better utilize them for the production of aviation gasolines." In addition, the PAW expected SONJ to make "every effort ... to conserve such BB fractions and to store them to the limit of capacity to the end that the least quantity possible be degraded from aviation gasoline manufacture." 53
- 42. In addition to requiring SONJ to maximize production of aviation gasoline through telegrams and night letters such as those described above, the PAW also specifically authorized construction projects to enable SONJ to increase its production of aviation gasoline. SONJ completed these projects according to PAW's specifications and thus greatly increased its output of aviation gasoline in order to meet the government's desperate needs. An example of such a construction project began in 1942,

⁵² Mar. 28, 1945 letter from C.L. Harding, PAW Director in Charge, District One, to J.R. Carringer, SONJ, designated as Exhibit 46. Directive 75 required refineries producing aviation gas or synthetic rubber to utilize all C₄ Fractions for the production of those products only. See Petroleum Directive 75, Oct. 19, 1943 by Ralph K. Davies, designated as Exhibit 47.

⁵³ Mar. 28, 1945 letter from C.L. Harding, PAW Director in Charge, District One, to J.R. Carringer, SONJ, designated as Exhibit 46.

when the government executed a contract with SONJ for the building of new facilities to produce 100-octane aviation gas. 54

- 43. In November 1942, SONJ completed construction of the catalytic cracking unit, which SONJ used to produce aviation gas. The PAW also later approved numerous modifications of and improvements to the unit, because those changes were deemed necessary to the war effort. The catalytic cracking unit was very important to the PAW because the unit was critical to the production of 100-octane aviation gasoline. The catalytic cracking unit was production of 100-octane aviation gasoline.
- 44. In order to meet the constantly increasing demands for 100-octane aviation gasoline, the Jersey Works adjusted their catalytic and thermal cracking processes to produce as much of the aviation gasoline as possible, despite the resulting expense

⁵⁴ Mar. 28, 1942 Memo from Geo. H. Hill, Jr., Vice President, Defense Supplies Corp. to Mr. Jones, designated as Exhibit 48 (indicating Defense Supplies Corp. would pay \$14,400,000 of the cost); see also ¶¶ 68 and 69, infra.

[&]quot;In 1940, Jersey initiated a program to increase its affiliates' refining capacity by the construction of Fluid catalytic cracking units. ... [0]n October 21, 1940, an appropriation for a unit at Bayway was confirmed The Bayway and Baytown units were completed in November [1942]." WWII History, at 80, included as Exhibit 28.

 $^{^{56}}$ See Mar. 1944 photo of the catalytic cracking unit at Bayway, designated as Exhibit 49.

^{57 &}quot;The cracking operations in a refinery, both the old thermal process and especially the more recently developed catalytic process, are the fundamental unit operations of our 100 octane aviation gasoline program. ... Catalytic cracking is the most efficient cracking process developed ... for the production of maximum yields of gasoline and distillate fuel" Oct. 7, 1944 PAW Memo re: Catalytic Cracking Construction Program, relevant pages designated as Exhibit 50.

and the inefficiency of degrading motor gasoline into fuel oil and sludge. 58

- 45. Because of the increasing demands for aviation gas, by early 1943, SONJ changed the manner of operation of its polymerization plant at Bayway. The facility was converted from a non-selective to a selective plant, meaning that it produced only polymers suitable for blending into aviation gasoline.⁵⁹
- 46. Later that same year, in August 1943, the PAW requested that SONJ make revisions to the Bayonne refinery "to produce an additional 1,249 B/D of aviation gasoline" because the "necessity of obtaining additional supplies of ... aviation gasoline is so great that it is requested that you develop this proposition and submit the necessary ... forms for its <u>immediate</u> construction." 60
- 47. In November 1943, the U.S. government recommended approval of SONJ's applications to construct booster pumps to increase the loading rate of aviation gas and to install

⁵⁸ "The use of intensive cracking also added considerably to the production of 100-octane gasoline. Since this de-graded motor gasoline into gas and fuel oil, it was very expensive but did increase production. Once these methods came into general use, it became apparent that numerous bottlenecks were throttling full production." WWII History, at 35, included as Exhibit 28.

May 1, 1943 Summary of Activities of the Aviation Gasoline Advisory Committee, at 9, relevant pages designated as Exhibit 51.

⁶⁰ Aug. 16, 1943 Letter from E. D. Cumming, PAW Director of Refining to Chester F. Smith, President, SONJ, designated as Exhibit 52 (emphasis added).

facilities to blend certain products to produce a specific type of aviation gas. 61

- 48. In late 1944, the WPB proposed "a new 27,000 B/D catalytic cracking unit including gas compression facilities and process and utility tie-in lines at Bayway." According to the WPB, construction was "particularly desirable" due to an increase in projected aviation gasoline requirements and because catalytic cracking "is one of the fundamental unit operations in the 100 Octane Gasoline Program" 63
- 49. In February 1945, the WPB recommended that SONJ
 "install[] 16 additional still tubes to the charge stock
 superheater at the fluid catalyst unit of the Bayway refinery.
 Other alterations include installation of additional burners and
 combustion chamber improvements" in order "to meet existing
 critical shortages of 100 octane aviation gasoline."64

⁶¹ See Nov. 5, 1943 Letter from J. M. Sitler, Purchasing Agent, SONJ to E. D. Cumming, PAW Director of Refining; Nov. 16, 1943 Letter from Major Stanley Wilk to E. F. Wilson; and Nov. 29, 1943 Memo from Major Wilk to E. F. Wilson, all designated as Exhibit 53.

Nov. 1944 WPB Summary of Application, designated as Exhibit 54; see also Nov. 20, 1944 Letter from Major Stanley Wilk, PAW Assistant Chief, Facilities Section to C. J. Everett, PAW Refining Division with attached Nov. 20, 1944 Night Letter from Major Wilk to J. M. Sitler, SONJ; Nov. 24, 1944 Letter from E. H. Barlow, Standard Oil Development Co., General Engineering Dept. to Everett; and Nov. 27, 1944 Letter from Everett to Max E. Cutler, Chairman, MAPUC, also designated as Exhibit 54.

⁶³ Nov. 1944 WPB Summary of Application, designated as Exhibit 54.

⁶⁴ July 1945 WPB Recommendation Serial No. 136,503, designated as Exhibit 55.

- "alterations and additions to an existing furnace [at Bayway known as Catalytic Cracking Unit No. 1] which [would] increase the production of 100 octane aviation gasoline." According to the recommendation form, "[s]hortage and essentiality [were] indicated" by a PAW report, and the WPB noted that these modifications to the facilities would help remove bottlenecks in the process. SONJ's January 25, 1945 Application for A Necessity Certificate called for certification of the 16 additional furnace tubes, as well as terminal fittings, intermediate tube supports, structural steel, gas burners, furnace setting alterations and pipe, valves and fittings to connect up to furnace. 66
- 51. In February 1945, the PAW directed that a 300,000 pound per hour steam boiler be constructed and in operation by the end of the year "in order to meet maximum winter demands" The construction of the boiler, which was used to supply steam for manufacturing aviation gasoline, is a prime

⁶⁵ April 2, 1945 WPB Recommendation, Serial No. NC-8788, and January 25, 1945 Application for A Necessity Certificate, designated as Exhibit 56.

⁶⁶ Id.

⁶⁷ June 27, 1945 Letter from J. M. Sitler, General Purchasing Agent, SONJ to PAW Materials Division (indicating that SONJ needed lumber in connection with the erection of the boiler), designated as Exhibit 57; see also Feb. 1945 WPB Recommendation, Serial No. 136408, designated as Exhibit 32.

example of the government's concern about increasing production of aviation gas at all costs. 68

- 52. In 1945, the WPB also approved the construction of a fluid catalytic cracking pilot plant unit with a one story main building and a foot tower section.⁶⁹
- 53. Even after Japan surrendered, letters from early 1946 between SONJ and the government describe various other changes that were previously made to Jersey Works' 100-octane aviation gasoline facilities in order to comply with government needs and increase output. In January 1946, the PAW approved the addition of costs incurred in adapting the new facilities at the fluid catalytic cracking plant at Bayway, including an air compressor, piping and Pauling oxygen recorder; and tie-in facilities at Bayonne, including lead blending and storage facilities. The

The reason the PAW allowed SONJ to construct the boiler was because "an emergency shut-down of any one of the high pressure boilers produces a cutback in refinery operations, and, if of two or three days duration, can result in losses up to 500 B/D of 100 octane aviation gasoline, in addition to other vital war products." Feb. 21, 1945 Letter to Mr. Frank E. Hutton, Office of War Utilities from B.K. Wherry, Chief Power Equipment Section, Materials Division, designated as Exhibit 58.

^{69 1945} WPB Recommendation, Serial No. 135,161, designated as Exhibit 59.

Jan. 2, 1946 Letter from Maxwell E. McDowell, Designated Representative, SONJ to Civilian Production Administration, Tax Amortization Branch; Jan. 4, 1946 Letter from McDowell to PAW Refining Division, designated as Exhibit 60.

Jan. 31, 1946 Letter from David M. Hudson, Acting Chief Counsel to Malcolm S. McComb, Deputy Director, Procurement Policy Division, Civilian Production Administration, designated as Exhibit 61.

2. 80-Octane Gasoline

54. Another specialty product that SONJ produced at the government's direction was an 80-octane gasoline usable in all climates and temperatures that the Army required for its vehicles. This gasoline was quite different from the 80-octane gasoline produced for civilian use in 1941. As with aviation gasoline, the PAW directed SONJ and other refiners to produce maximum levels of 80-octane gasoline. This required maximum production of 80-octane gasoline had the natural consequence that the production and discharge of petroleum wastes increased parallel with the increase in production.

3. Navy Special Fuel

55. Similarly, the Navy did not use ordinary residual fuel oil to power most of its ships, but required production of "Navy Special" fuel oil, which was a blend of special distillates, cutter stocks, and residual bases that was difficult to

⁷² Feb. 1945 WPB Recommendation, Serial No. 136408, designated as Exhibit 32; PAW History at 219, included as Exhibit 6.

⁷³ Id.

⁷⁴ Id.

produce.⁷⁵ SONJ supplied the PAW with vast quantities of Navy Special fuel oil.⁷⁶

56. To meet the Navy's needs, WPB recommended "the installation [at Bayway] of approximately 1400' of 10" pipe in order to release line now used jointly for crude transfer and transfer of Navy fuel oil for Navy fuel service alone." This modification to facilities would increase the transfer rate from 4,500 B/D to 6,000 B/D. 78

4. Isopropyl Alcohol

57. In addition to providing petroleum products, in 1941, the Jersey Works was one of the principal United States sources of production of isopropyl alcohol. The production of acetone, which was used to make

⁷⁵ PAW History at 220, included as Exhibit 6.

⁷⁶ June 21, 1943 Letter from C.F. Smith, President, SONJ to Robert H. Colley, PAW Chairman, Refining Committee District No. 1, and June 22, 1943 Letter from Colley to E. D. Cumming, PAW Director of Refining, included as Exhibit 33. The Bayway refinery handled 70,000 barrels per day of Navy specification fuel oil. May 18, 1943 "Standard Oil Executive Committee Notes," designated as Exhibit 62.

Nov. 10, 1944 WPB Recommendation, Serial No. 130,653, designated as Exhibit 63.

⁷⁸ Id. SONJ also supplied the military with Navy Diesel Fuel. See May 25, 1944 Letter from C. S. Smith, SONJ to Robert H. Colley, PAW Chairman, Refining Committee, District One, designated as Exhibit 64.

⁷⁹ "During the period from 1938 to 1943, production of crude isopropyl alcohol has been increased from about 3,800,000 gallons per year to 11,800,000 gallons per year." May 8, 1944 Letter from J. M. Sitler, Purchasing Agent, SONJ to E. D. Cumming, PAW Director of Refining, designated as Exhibit 65 (estimating that an increase in throughput of 50,000 gallons per month of finished isopropyl would result with the addition of another tank).

the explosive Cordite. 80 It was also used as antifreeze to protect bomber noses and gun turrets against frost, and for injection into the carburetors of airplanes to prevent the formation of ice or carburetor collars. 81

- 58. At the direction of the PAW, the Jersey Works increased production of isopropyl alcohol by approximately 50%, and ran the facilities at maximum capacity throughout the war. 10 In fact, all of the isopropyl alcohol produced at the Bayway refinery was "distributed under Government control," pursuant to "PAW Directive #1." 183
- 59. In May 1944, the U.S. government recommended approval of SONJ's application to build new facilities to recover isopropyl alcohol used in the production of lubricating oil additives. 84 As a result, the PAW approved "the installation of new facilities for the recovery and concentration of isopropyl alcohol for use in the manufacturing of lubricating oil

⁸⁰ WWII History, at 123-124, included as Exhibit 28.

⁸¹ Id.; May 8, 1944 Letter from J. M. Sitler, SONJ, to Mr. E. D. Cumming, PAW designated as Exhibit 65.

⁸² WWII History, at 124, included as Exhibit 28.

May 8, 1944 Letter from J. M. Sitler, Purchasing Agent, SONJ to E. D. Cumming, PAW Director of Refining, designated as Exhibit 65.

⁸⁴ May 11, 1944 Memo from Major Stanley Wilk to R. P. Wilson, designated as Exhibit 66.

additives" at the Bayonne refinery. The facilities were to consist of heat exchangers, on-band pump, process piping, control valves and regulators, and electric power lines. 86

5. Wax

- of specialty products that the Jersey Works produced in large quantities in response to increasing demands from the U.S. government. For example, in October 1943, the PAW recommended approval of SONJ's application to install tanks, mixing columns, and piping to help in the production of refined petroleum wax, which was necessary in view of the then-existing shortage. 87
- 61. In the summer of 1944, SONJ sought approval from the PAW and the WPB to alter its wax refining operation by constructing steel tanks for storage of fresh water to help produce paraffin wax with high melting points. 88 Specifically, the WPB noted that "due to the critical demand for paraffin wax,

 $^{^{95}}$ Sept. 1944 WPB Recommendation, Serial No. 128,333, designated as Exhibit 67.

³⁶ Id.; see also May 22, 1944 Letter from Stanley Wilk, PAW to District I Director of Refining (enclosing WPB Recommendation Serial No. 127,886), designated as Exhibit 68.

⁸⁷ Sept. 29, 1943 Letter from J. M. Sitler, SONJ to E. D. Cumming, PAW Director of Refining; Oct. 12, 1943 Memo from W. W. Holaday, Assistant Director of Refining to George L, Parkhurst; and Oct. 16, 1943 Memo from A. P. Anderson to R. P. Wilson, all designated as Exhibit 69.

Mar to Capt. F. Rathjon; Aug. 30, 1944 Letter from J. M. Sitler, Purchasing Agent, SONJ to Capt. Frederick H. Rathjon; Nov. 1944 WPB Recommendation, Serial No. 130,098, all designated as Exhibit 70.

it is necessary that [fresh water] facilities be provided to insure an uninterrupted flow of these products" The WPB therefore recommended various construction projects that would increase SONJ's production of refined wax, including:

- Replacement of steel tanks and installation of a booster pump.⁹⁰
- "Alterations to charging system of two existing wax sweaters" in order to increase production of refined
 wax, "a needed commodity in the war effort." 91
- "Construction of additional facilities for production of high melting point waxes."⁹²
- 62. In 1944, SONJ also sought approval from the WPB to disassemble a wax sweater at Bayway and re-erect it at Bayonne for the continued production of wax. 93
 - C. The PAW Required SONJ to Operate the Jersey Works on a Continuous Basis
- 63. In order to meet the military's constantly increasing needs for petroleum products, the PAW directed the Jersey Works

⁸⁹ Nov. 1944 WPB Recommendation, Serial No. 130,098, included as Exhibit 70.

⁹⁰ Id.

⁹¹ June 1944 WPB Recommendation, Serial No. 130,396, designated as Exhibit 71.

⁹² July 1944 WPB Recommendation, Serial No. 131,106, designated as Exhibit 72.

⁹³ Feb. 1945 WPB Recommendation, Serial No. 132,825, designated as Exhibit 73.

to operate its facilities continuously, at or above capacity, and without normal periodic maintenance. 94

64. According to the PAW itself, beginning in 1941, the petroleum industry "raised its tempo of operation to an abnormal level." For instance, in 1944, the PAW called for 24-hour a day operation of transport trucks. Furthermore, on June 21, 1944, the PAW required refineries producing 100-octane aviation gas like the Jersey Works to "operate catalytic and thermal cracking units at maximum production rates" and to "postpone shutdowns for routine inspection and maintenance as long as possible and minimize down time by every means at your disposal" Continuous operation and postponed maintenance of the facilities at the Jersey Works naturally caused increases in the production and discharge of petroleum wastes.

⁹⁴ WWII History, at 86, included as Exhibit 28 ("[I]n the interest of increased output, the Jersey [Works] decided that they would operate equipment for longer continuous periods of time. This they proceeded to do, and month after month Bayway, Bayonne, ... reported various records for uninterrupted operations. Each record was often exceeded the following month with the announcement that the run was still continuing. The average length of run on thermal cracking equipment at Bayway in 1943 was double that of 1942, and the overall capacity factor for six months to December, 1944, was 93.4 per cent, an all time high average.")

⁹⁵ Sept. 30, 1944 Letter from Ralph K. Davies, PAW Deputy Petroleum Administrator to J. A. Krug, WPB Acting Chairman, designated as Exhibit 74.

⁹⁶ Feb. 4, 1944 Letter from H. W. Dodge, PAW Director in Charge, District One to All Original Suppliers in District One, designated as Exhibit 75.

⁹⁷ June 21, 1944 Night Letter from Bruce K. Brown, Assistant Deputy Petroleum Administrator, designated as Exhibit 24; see also July 19, 1944 Minutes of Meeting Petroleum Industry War Council, D.C., at 8, relevant pages designated as Exhibit 76 (noting that demand for 100-octane gasoline continued to increase).

- 65. The following examples show how the PAW forced SONJ to operate the Jersey Works' units on a continuous basis even under "extreme" conditions:
 - In March 1942, the PAW informed SONJ that "[p]roduction of one hundred octane aviation gasoline and toluene to the full extent of capacity is [a] positive requirement..." SONJ was expected to accomplish this goal "even though extreme measures may be necessary."
 - In June 1944, in order to meet the need for 100-octane aviation gasoline, the PAW directed SONJ as follows:
 - (1) Those facilities contributing in any way to 100 octane gasoline production should be kept on stream maximum possible time. (2) Postpone shutdowns for routine inspection and maintenance as long as possible and minimize down time by every means at your disposal, particularly through obtaining cooperation maintenance forces in working overtime and shifts during unit shutdowns. (3) Operate catalytic and thermal cracking units at maximum production rates with emphasis on production additional feed stocks for alkylation and codimer operations. 100
 - About a week later, in July 1944, the PAW "urg[ed] that aggressive action be taken at executive level to insure loading, dispatch, unloading and return of cars on

⁹⁸ Mar. 10, 1942 Statements Relating to Policy regarding Telegram to all refiners of 100 octane aviation gasoline and toluene, designated as Exhibit 77.

⁹⁹ Id.

June 22, 1944 Telegram from C J Everett, PAW Acting Director of Refining to Presidents of All Companies Producing Alkylate or Codimer, designated as Exhibit 78.

continuous schedule of refinery and terminal operations including Sundays and all holidays."101

D. Construction Projects Under the PAW

- 66. The government only required continuous not operations; it also required refiners to undertake vast construction projects to meet the government's needs for additional petroleum products. But no significant facilities could be constructed or modified without the final approval of the WPB if the activity in question could consume any scarce resource needed for the war effort. Therefore, "the Refining Industry [was] essentially restricted to new construction work which represented the barest minimum which would achieve the end of supplying the most critical war products." 102 These rules inevitably prevented the construction of facilities that could have limited the environmental impact of the war-driven production increases.
- 67. Steel, copper and virtually all other materials needed for construction or modification of refinery and petrochemical facilities were considered scarce throughout the war years; as a result, no refinery facilities could be modified or improved

July 1, 1944 Night Letter from George A. Wilson, PAW Director of Supply and Transportation to M. J. Rathbone, President, SONJ, and other refiners, designated as Exhibit 79.

¹⁰² May 29, 1944 Letter from E. D. Cumming, PAW Director of Refining to All Petroleum Refiners, designated as Exhibit 80.

without final approval from the WPB, which issued a specific allocation of the required materials. 103

- construction was necessary at the Jersey Works, it often required that major construction projects begin "immediately," upon notice from the government. In fact, the Defense Plant Corporation ("DPC"), which was organized on August 22, 1940 to finance and supervise construction and equipping of private industrial facilities, was involved with construction projects at the Jersey Works. In February 1942, according to a letter SONJ sent to the DPC, the DPC had informed SONJ that it "desire[d] to arrange immediately for the erection of plants to produce additional quantities of butadiene, toluene, and 100 octane aviation gasoline and that [the DPC] desire[d SONJ] to undertake to erect and operate such a plant."
- 69. Less than a week later, the SONJ Manufacturing Department submitted a proposal to DPC for the construction of facilities to produce 100-octane aviation gasoline, butadiene,

¹⁰³ See June 26, 1943 Letter from Max B. Miller, PAW Chief of Construction Section, Refining Division to certain refiners and June 30, 1943 Letter from Miller to George H. Mettam, PAW Director of Refining, District 1, designated as Exhibit 81; see also War Production Board, P-98-b, Jan. 5, 1945 (identifying the scarce resources that could only be used with specific permission from the WPB) and War Production Board, P-98-b, Amdt. 1, Nov. 22, 1944 (same), designated as Exhibit 82.

 $^{^{104}}$ Feb. 27, 1942 Letter from SONJ to DPC, designated as Exhibit 83 (emphasis added).

and toluene, as requested by DPC. 105 A contract for the project was executed by March 28, 1942. 106

- 70. Other construction projects met the PAW's and WPB's approval only if they were necessary for the war effort. Examples include:
 - In October 1944, the WPB recommended the installation of pipelines at Bayway to provide separate lines for butane fractions from the catalytic cracking plant and the gas absorption plant to the selective polymer plant stabilizer. The equipment covered by this project consisted of stairs and a platform for a 5' x 12' drum, as well as pipe, fittings, and valves. 107
 - Also in October 1944, the WPB approved "construction of new facilities to provide refrigeration to pilot plants," because "these facilities are required to secure reliable data in connection with the production of aviation gasoline and synthetic rubber." 108
 - As previously mentioned, at the end of 1944, the PAW recommended construction of new "300,000 lb. per hour steam

 $^{^{105}}$ Mar. 2, 1942 Standard Oil Executive Committee Minutes, designated as Exhibit 84.

 $^{^{106}}$ Mar. 28, 1942 Memo from Geo. H. Hill, Jr., Vice President, Defense Supplies Corp. to Mr. Jones, designated as Exhibit 48.

^{107 1944} WPB Recommendation, Serial No. 129,174, designated as Exhibit 85.

^{108 1944} WPB Recommendation, Serial No. 128,780, designated as Exhibit 86.

boiler and attendant facilities for generating steam" to maximize production of "aviation gasoline and other products used in the war effort." 109

• In 1945, the WPB recommended installation of a boiler at Bayway to "provide some cushion for upsets and interruptions in steam generating capacity, and thereby aid in safeguarding and sustaining a large output of war products."

71. Maintenance projects that SONJ normally took care of as a matter of course required specific government approval during the war years. The WPB only approved requests for construction or modification of facilities that it deemed essential to the war effort or critical civilian needs. SONJ was not permitted to repair deteriorating equipment without government approval. For example, in the fall of 1944, SONJ sought approval from WPB to replace deteriorating storage tanks storing pressed oil because of leakage, 111 and to replace other "existing deteriorated facilities for handling fuel gas at

¹⁰⁹ Dec. 29, 1944 Letter from J. M. Sitler, SONJ Purchasing Agent to A. P. Frame, PAW Director of Refining; Feb. 5, 1945 Letter from C. J. Everett, PAW Director of Refining, District One to Max E. Cutler of MAPUC, Newark, N.J.; Feb. 7, 1945 Letter from Louis Fenn Vogt, WPB Chief of Production Service Department; and Feb. 8, 1945 Letter from Everett to Frame, all designated as Exhibit 87.

^{110 1945} WPB Recommendation, Serial No. 136408, at 3, designated as Exhibit 88.

^{111 1944} WPB Recommendation, Serial No. 126511, designated as Exhibit 89.

Linden."112 The WPB recommended those maintenance activities in October 1944 because of "the importance to the war effort of the products being produced by [the] plant.113

72. Due to the shortage of materials like steel, the government also directed the use of second-hand materials in construction projects. The PAW recognized that SONJ and the other refiners were operating under bleak conditions, as shown by a letter written by a PAW officer in 1944: "A large part of the overload of crude was accomplished in prewar facilities. Equipment has been wearing out at an accelerated rate. Much is now obsolete. The orderly replacement of worn and inefficient equipment is an immediate problem." The use of these obsolete facilities inevitably increased the likelihood that environmental contamination could result.

73. In August 1945, the WPB recommended construction of new research and development facilities at the Jersey Works, as well as improvements to existing Research & Development ("R&D")

 $^{^{112}}$ 1944 WPB Recommendation, Serial No. 129,030, at 1, designated as Exhibit 90.

¹¹³ Id. at 2.

¹¹⁴ July 23, 1942 Letter from Ralph K. Davies, PAW Deputy Petroleum Coordinator to Hon. Jesse Jones, Reconstruction Finance Corporation, designated as Exhibit 91.

¹¹⁵ Sept. 30, 1944 Letter from Ralph K. Davies, PAW Deputy Petroleum Administrator, Davies to J. A. Krug, WPB Acting Chairman, at 1, designated as Exhibit 74.

facilities. Most of the R&D activities conducted at the Jersey Works during World War II were "directed to the production of war products and processes such as catalytic cracking and reforming, hydrogenation, alkylation, aviation gasoline, high octane components and blending agents, lubricating oil additive agents, butadiene, synthetic rubber, resins and plastics. Experimentation [was] conducted also on gas turbines, jet propulsion engines and allied subjects. "117 Other war-related activities included evaluation of "super-aviation fuels [and] improving the production methods for toluene, jet propulsion fuels, etc:"118

E. Tank Car Shipments of Oil During World War II

74. Until 1942, SONJ received crude oil by seafaring oil tankers. However, in 1942, enemy submarines began interfering with oil tanker traffic. Because the country needed the Jersey Works to produce critical war products like aviation gasoline, the PAW, with the assistance of other government agencies, commandeered all available railroad tank cars, and

¹¹⁶ Aug. 3, 1945 Letter from I G. Harmon, Chairman, PAW Facilities Review Committee to Carleton J. Everett, PAW Director, Refining Division - District #1, designated as Exhibit 92.

WPB Recommendation for Action, Serial No. 140914, at 2, designated as Exhibit 93.

¹¹⁸ Id. at 5.

¹¹⁹ See, e.g., Directive No. 57, August 19, 1942, Ralph K. Davies, designated as Exhibit 94.

directed that crude oil for the Jersey Works be supplied by tank car instead of tanker. 120

75. As with its other operations, the Jersey Works loaded and received tank cars 24 hours a day, seven days a week at the specific direction of PAW. SONJ maintained this full-time schedule, which began in February 1942, at all of its refineries and terminals.¹²¹

WWII History, at 81, included as Exhibit 28; see also July 16, 1942 Letter to Hon. A. Willis Robertson from Ralph K. Davies, Deputy Petroleum Coordinator, designated as Exhibit 95. "It will be recalled that, a little more than a year ago, virtually no oil was moved from the producing areas to the East by tank car. Now, the rails are moving oil into the East at a rate of considerably more than 800,000 barrels a day." Aug. 31, 1942 Letter to Oliver Klinger, Jr., Editor, Fuel Oil News from Ralph K. Davies, Deputy Petroleum Coordinator, designated as Exhibit 96. The PAW directed the distribution and use of tank cars throughout the country. See July 22, 1943 Letter from Harold L. Ickes, PAW, to Hon. Charles R. Clason, House of Representatives, designated as Exhibit 14; see also May 30, 1942 Schedule 4 -Heavy Fuel Oil Allotted to Purchasers in District One, designated as Exhibit 97 (allocating 27.7% of the fuel oil sent by tank cars to SONJ). In fact, the PAW was so concerned about the use of tank cars that it directed the following: "No more than one day's supply of empty tank cars shall be held at any refinery for the movement of any petroleum or petroleum product" (with certain exceptions for critical war products). Recommendation No. 44, May 7, 1942, from R. K. Davies, designated as Exhibit 98.

¹²¹ WWII History, at 141, included as Exhibit 28.

76. Following an industry-wide request made by the PAW, SONJ constructed an unloading rack, placed on a site selected by the PAW, consisting of two 1000 foot timber racks with space allowing the simultaneous unloading of 100 tank cars. In fact:

The increased volume of rail shipments created various problems in the Jersey refineries. These refineries had been designed to receive the crude petroleum from tankers and to ship out products by tank car. They had little equipment which could be used for the receipt of crude by tank car, and it was therefore necessary to build railroad tracks, unloading racks, short pipelines, pumps and storage tanks. The construction program began at the Jersey works in August 1941, and the last unit was completed in December 1943. 123

77. Even though the unloading rack construction project was financed by SONJ, it was done at the government's direction, and in fact, SONJ later sought reimbursement for its investment in the facilities. 124

¹²² WWII History, at 143-44, included as Exhibit 28; see also Dec. 1943 photo of the tank car unloading rack at Bayonne, designated as Exhibit 99.

¹²³ WWII History, at 144, included as Exhibit 28; see also Nov. 18, 1942 Letter from J.R. Parten, Director of Transportation, Office of Petroleum Coordinator for War to V. V. Boatner, Director, Division of Railway Transport, Office of Defense Transportation, at 2 ("[SONJ] and this Office are very much interested in the possibility of importing the handling of crude oil to the unloading rack ... at Bayway..."), designated as Exhibit 100.

Nov. 12, 1942 Telegram from William C. Eberle, Transportation Division, Office of Petroleum Coordinator for War to C.L. Harding, DSC; Nov. 30, 1942 Letter from J.R. Carringer, Vice President, SONJ to Eberle; and Dec. 5, 1942 Letter from Eberle to Carringer, all designated as Exhibit 101.

- 78. Moreover, in 1942, all shipments for the Navy were made at the Linden terminal. 125
- 79. As a further response to the sinking of tankers by German submarines, the Government decided to construct two large pipelines from the oilfields of Texas and Louisiana to the Northeast. These pipelines, generally known as the "Big Inch" (for crude oil) and the Little Inch (for refined products) were owned by Defense Plant Corporation, a government corporation, financed by the Reconstruction Finance Corporation, and built for the government by War Emergency Pipelines, Inc., a consortium of oil companies. 126
- 80. Linden, N.J., marked the transition between the Big
 Inch and the New York systems of distribution pipelines by which
 crude oil was conveyed to other refineries in the New York area;
 "[t]he Standard refinery [Bayway] was located at Linden and was
 connected directly to the main line."
 127

Dec. 5, 1942 Memo from L. R. Cowles, Assistant Director of Transportation, Office of Petroleum Coordinator for War to Eberle; Dec. 14, 1942 Letter from William C. Eberle, Director of Transportation, District Number 1 to L. R. Cowles, Assistant Director of Transportation, both designated as Exhibit 102.

¹²⁶ WWII History, at 151-53, included in Exhibit 28.

¹²⁷ PAW History, at 432, included in Exhibit 6.

- 81. Accordingly, "[t]ankage at Linden, N.J., was acquired in place" by Defense Plant Corporation from SONJ. The first delivery of crude to Linden occurred August 20, 1943. 128
- 82. Exhibits 118 and 119 are photographs of a fire that occurred at Tank 665 on March 2, 1944; the tank in question was part of the tankage acquired by Defense Plant Corporation from SONJ.

F. Inspection by Government Agencies

- 83. The U.S. government also maintained a variety of representatives at SONJ and other refineries, including service inspectors and engineers: "PAW maintained supervision of refineries having Government contracts through its district inspectors. The PAW representatives examined plant operations with a view to effecting optimum performance." 129
- 84. The Army also conducted inspections of petroleum facilities. For example, military officials visited 100-octane aviation gas refineries like Jersey Works to check compliance with military directives, determine how the refineries could

¹²⁸ PAW History at 430-31, included in Exhibit 6; Declaration of Jennifer Borzi filed herewith.

¹²⁹ The Role of DSC, at 67, included as Exhibit 12.

assist with the 100-octane aviation gas program and review construction projects. 130

IV. GOVERNMENT CONTROL OF CERTAIN ACTIVITIES AT JERSEY WORKS AFTER WORLD WAR II

85. A week after the surrender of Japan, the PAW wrote:

We have succeeded, together, in meeting the full and on time the unprecedented military orders for petroleum and, in addition, have provided sufficient petroleum products to meet the essential civilian requirements both at home and abroad. This could not have been done without the complete cooperation and the close working relationship that have existed between the forces of Government and industry from the beginning. 131

Even after World War II ended, however, the federal government maintained control of certain activities at Jersey Works into the 1970s.

A. Ram Jet Engine Contract

86. In May 1945, the Jersey Works entered into a contract with the Navy for the development of ram jet engines and rocket fuel. Under that contract, government-owned facilities were acquired, constructed and installed on a piece of land located

April 1, 1943 Memo of Joint Conference of Representatives of Eastern Service Commands and P.A.W.; Feb. 20, 1943 Letter from Archer L. Lerch, Assistant Provost Marshal General, to Comanding Generals; and Lt. Hopkins' Itineraries for Jan. and Feb. 1945, relevant pages of all designated as Exhibit 103.

¹³¹ Aug. 22, 1945 Letter from Ralph K. Davies, PAW Deputy Petroleum Administrator to R. H. Colley, Chairman, Refining Committee of District One, designated as Exhibit 104.

at Bayway and leased to Esso Research and Engineering Company ("Esso Research"), a predecessor in interest of ExxonMobil. The facilities consisted of a compressor building, an air compressor, steam turbine and air heater, stream line, a jet engine laboratory and control room, a small office building, and related equipment. The buildings and equipment were used by Esso Research to develop ram jet engines for Navy guided missiles and to develop a superior fuel for ram jet operation. 132

87. These government-owned facilities at Bayway "were installed to enable Esso Research to conduct research and development work relating to ordnance devices for the Bureau of Ordnance, Navy Department." However, the facilities were used "only in carrying out work for the Bureau of Ordnance ..., except for intermittent use by Esso Research for its own account" In fact, the contract generally prohibited Esso Research from using the facilities for its own purposes. The contract also

¹³² April 23, 1956 Letter, designated as Exhibit 105.

¹³³ Feb. 21, 1956 Letter from R. F. Nichols, Esso Research to N. B. Wright, Navy Dept., Bureau of Ordnance; see also Mar. 6, 1958 Letter from J. W. Frankl, Contracting Officer to Esso Research; and April 29, 1958 Letter from W. A. Wilson, Contracting Officer to Esso Research, all designated as Exhibit 106.

Feb. 21, 1956 Letter from R. F. Nichols, Esso Research to N. B. Wright, Navy Dept., Bureau of Ordnance, included as Exhibit 106.

¹³⁵ Id.

required Esso Research to obtain government approval to modify the laboratories. 136

88. The United States continued to own these research facilities until 1961, at which time they were sold to ExxonMobil for \$22,612.50. 137

B. Solid Rocket Propellant Research and Development

89. On December 1, 1958, Esso Research began work on a contract to develop solid rocket propellants for the government. That contract was extended again in January 1962 when Esso Research received a new, non-profit one-year \$2 million contract. "The studies are being carried out under the auspices of the Defense Department's Advanced Research Projects Agency (ARPA), and the contract is being administered by the Army Ordnance Office in New York City." 138

C. Navy Special Fuel

90. Finally, Humble, a predecessor in interest to ExxonMobil, continued to provide the government with Navy Special

 $^{^{136}}$ Nov. 24, 1952 Letter from Russell S. Smith, Contracting Officer to SONJ, designated as Exhibit 107.

¹³⁷ October 25, 1961 Letter from Paul Cirillo, General Services Administration to Esso Research, designated as Exhibit 108.

Bayway Refiner (January 26, 1962), designated as Exhibit 109; see also Standard Oil Company 1958 Annual Report at 26; Standard Oil Company 1959 Annual Report, relevant pages of both designated as Exhibit 110; "Fuels For The Space Age", Lamp, Spring 1960, designated as Exhibit 111.

Fuel - blended according to government specifications - during the 1970s. 139

V. COAST GUARD VIOLATIONS

- 91. During the history of the Jersey Works, ExxonMobil and its predecessors have been cited a number of times by the U.S. Coast Guard for various spills to navigable bodies of water adjacent to the Bayway and Bayonne refineries. Plaintiffs allege that ExxonMobil received 12 oil spill citations from the U.S. Coast Guard from September 28, 1984 through July 24, 1989 (Bayonne Compl. ¶ 31.) Some examples of the U.S. Coast Guard citations for these spills into the navigable waterways of the Arthur Kill, New York Harbor, Kill Van Kull, and Platty Kill Creek include:
 - On April 10, 1984, an Exxon barge spilled oil into the Arthur Kill. 140
 - On June 9, 1984, an Exxon barge spilled oil into the Upper New York Bay near Bayonne, NJ. 141

April 17, 1972 Fax from J.E. Turton, Humble Oil & Refining Co. to C.G. Beyer, Humble Oil & Refining Co.; May 26, 1972 Quality Deficiency Report, both designated as Exhibit 111.

¹⁴⁰ May 16, 1985 Letter of Assessment to Exxon Shipping from M.S. Macie, U.S. Coast Guard, including Hearing Notes, designated as Exhibit 112.

May 16, 1985 Letter of Assessment to Exxon Shipping from M.S. Macie, U.S. Coast Guard, including Hearing Notes, designated as Exhibit 113.

- On January 1, 1987, an Exxon barge spilled oil into the Kill Van Kull.¹⁴²
- On April 12, 1987, an Exxon barge spilled oil into the Arthur Kill. 143
- On July 21, 1987, an embankment from a sea wall collapsed and caused lack wax to spill into the Platty Kill Creek.
- On December 21, 1987, an oil tank overflowed spilling oil into the Kill Van Kull. 145

I declare under penalty of perjury that the foregoing statements are true and correct.

Dated: December 20, 2004

Mark S. Germann

1549696

 $^{^{142}}$ March 15, 1988 Letter of Notification to Exxon Shipping from E.C. Cooke, U.S. Coast Guard, designated as Exhibit 114.

¹⁴³ July 10, 1989 Letter to Exxon Shipping from E.G. Rosenberg, U.S. Coast Guard, designated as Exhibit 115.

July 24, 1989 Letter to Exxon from E.G. Rosenberg, U.S. Coast Guard, including Water Pollution Violation Report, which mistakenly identifies the body of water as the "Patti Kill Creek," designated as Exhibit 116.

¹⁴⁵ Feb. 19, 1991 Letter to Exxon from E.G. Rosenberg, U.S. Coast Guard, including Water Pollution Violation Report, designated as Exhibit 117.

Made in NEW JERSEY

The Industrial Story of a State

JOHN T. CUNNINGHAM

Rulgers University Press · New Brunswick, New Jersey · 1954

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MANUFACTURED IN THE UNITED STATES OF AMERICA

For DOROTHY B. CUNNINGHAM

FOREWORD

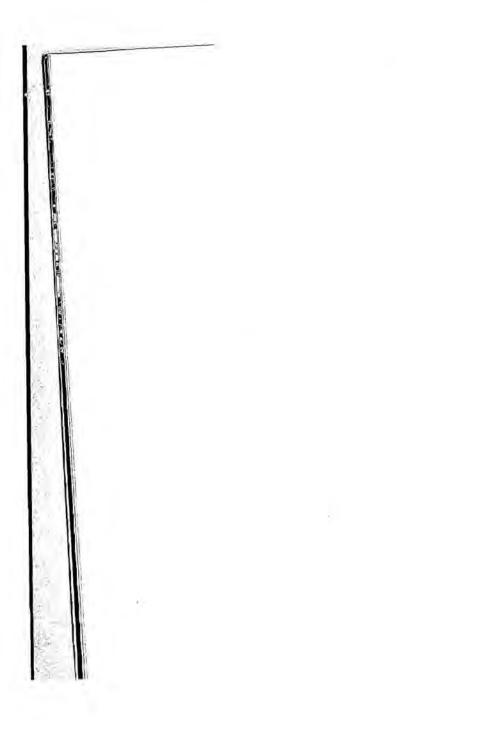
Made In New Jersey appeared first as a 31-part soy's heritage. This policy of pausing to survey the series in The Newark Sunday News Magazine, and its publication marked another step in the continuing interest in the State of New Jersey on the part of Richard B. Scudder, publisher, and Lloyd M. Felmly, editor, of The News.

Made In New Jersey is a companion volume to This Is New Jersey, the story of the state's twenty-one counties, published in 1953. Like the material in this book, the chapters in This Is New Jersey were published first in The News.

The two series which have now been converted into books are part of the continued publication by The News of authentic and well-written series on New Jor-

past has led The News through continued chapters on the state's Indians, inventors and governors; sketches of old Newark; the development of railroading in New Jersey, and interesting places for summer motorists to explore.

The News has reaped many honors for these series. winning major awards from the State of New Jersey and the American Association for State and Local History. The work, unique in newspaper circles, has carned The News the high regard of a wide circle of teachers, historians and others concerned with telling the story of a great state.



PREFACE

Maile In New Jersey is a label to tie on huge machines, steek battleships and gleaming automobiles; to stamp on cans of paint, containers of vitamins and cans of soup; to affix to delicate dolls, plastic toys and roaring airplane motors; to print on rolls of paper, bright bread wrappers and frozen food containers. It's a summing up of the amazingly diversified industrial production of the nation's fourth smallest state, whose annual production of \$5,000,000,000 worth of finished goods ranks New Jersey seventh nationally in industrial manufacture.

Few people have to be told that New Jersey is an industrial state, of course; sight and sound and smell proclaim that fact to even the most easual rider on a cross-state Pennsylvania Railroad train or to even the most absorbed driver on the New Jersey Turnpike. Yet even within the bounds of the state most people know little of the varied nature of New Jersey production, mainly because Made In New Jersey is a label seldom used to identify the outpourings of the state's 11,000 manufacturing plants.

This book seeks to help rectify that oversight, to cull from bewildering statistics and scattered facts a simple and direct story of the rise and development of New Jersey's fabulous industrial might. No claim to completeness is made; obviously one book can present only a broad picture, leaving the minute details to be touched in by others—perhaps by the industries themselves.

Obviously, too, no single book could tell the role of each one of New Jersey's 11,000 industries. Even a mere listing by name and address is far out of the question. Rather, the emphasis is on telling the general story of thirty broad categories of industry, in all of which New Jersey has had, and continues to have, great importance.

Nearly a year of intensive study and research went into the gathering and classifying of lacts in Mude In New Jersey. The writer visited more than 150 individual firms in every area of the state, and took full opportunity to witness at first hand the production of everything from automobiles to petroleum, from raw

plastics to toys, from beer hottles to heer. This close look at such varied production, possibly never before taken by any one writer in New Jersey, fixed firmly in mind the awareness of the state's tremendous industrial obtential.

Several themes are offered in Mode In New Jersey. Chief emphasis is on the factors affecting the development of industry through the years, on showing that today's industry is the culmination of decades of work and struggle. The principal theme, therefore, is: What is New Jersey industry, and why is it great?

A major underlying theme tells the parts played by individuals in shaping the industrial pattern of both state and nation. Time after time these pages tell the saga of individuals who persisted in the face of great personal difficulties and in the face of ridicule, and in the end founded and nurtured enterprises which have grown into world-wide importance.

Then there is the theme of New Jersey's industrial development set against the background of all industrial history, so that Made In New Jersey, white written to tell the specific story of industrial growth within one state, in effect tells the general story of all industrial growth.

Finally, a theme has been threaded into these pages to show that white industry is important to New Jersey, so is New Jersey important to industry. The vital markets, the unexcelled transportation, the vast pools of skilled workers—all found in and near New Jersey—make it certain that industry must continue to seek out the state. New Jersey need not apologize to industry, need not feel overwhelmed that industry looks with favor upon the state. Instead, New Jersey can have the certain knowledge and buoying pride that no state is better suited for industry. If New Jersey owes much to industry—and it does—industry, in lurn, owes much to New Jersey.

Often, in preparing this material, the writer felt that industry in general is not fully aware of the exciting and vital story it has to tell. Many industries find it difficult, if not impossible, to delineate quickly and clearly their early beginnings. Many know little of

i

PREFACE

exact names of founders, of early struggles and early successes. A few industries even scoff at early beginnings, preferring to emphasize only the production of the moment. Fortunately, though, there is a growing awareness on the part of broad segments of industry that today's annual report is of far less interest to the average non-stockholder than the romantic story of yesterday's founder struggling to gain a foothold in the industrial world.

The thought persists, too, in this writer's mind that industry might well concern itself with telling its story in general terms—in terms of industry-wide statistics, history, and modern achievements. Statistics are particularly difficult to dig out, and will become increasingly so now that the Census of Manufactures has become a casualty of an economy-minded Congress. The last such Census was prepared in 1947 and a clear picture, unquestionably altered by the Korean War, is now exceedingly hard to get. Elimination or curtailment of the Census of Manufactures is distressing to students of current economics and will be a source of dismay for future historians.

Thus, the writer found difficulties in gathering the material for Made In New Jersey, but there is a growing awareness on the part of all industry that it must tell its full story—past and present—in vigorous and impartial fashion. The hope is that this book may help point the way.

It is evident that a book embracing the scope of Made In New Iersey needed the help of countless numbers of people in planning and researching the material. Unfortunately space permits thanking only those most intimately connected with the work.

Above all, my thanks go to many colleagues on The Newark News, and my chief thanks go to Lloyd M. Felmly, editor of The News. First my thanks are extended to Mr. Felmly for the opportunity to research and write the material for its initial appearance as a weekly series in The Sunday News Magazine, and secondly, for permission to re-use the basic material in this book.

Other News personnel helped in planning and preparing the text, including Robert T. Taylor, Edwin S. Hipp, and Joseph Taddeo. A great deal of help in researching the material came from Albert R. Hunt, Alexander Orr, and Stanley Grupy of The News's file room. To Mr. Grupy I also extend thanks for his preparation of the index.

Naturally the author is indebted to The News's photographic department, particularly to its head, Albert Beissert, and to the many photographers who took scores of pictures especially for the series.

Industrial leaders and public relations men cooperated willingly in the preparing of Made In New Jersey, and to them I acknowledge my debt. It is my regret that I cannot recognize each of them individually, yet that is impossible, since I talked to nearly 200 industrial personages in the course of the work. My thanks to them is sincere; for their time, their interest, their information and for pictures.

In any project in which hundreds of people helped, the difficulty—and the danger—is in singling out a few for special attention. Still, there are a few individuals who uided me materially throughout the series, and these should be recognized.

Foremost of these are Arlene R. Sayre, Gladys Ellsworth and Albert R. Post of the New Jersey Department of Conservation and Economic Development; Miriam Studley, New Jersey librarian at Newark Public Library; Marius Scopton of American Cyanamid Company; Admiral Harold G. Bowen, Paul Busse, Norman Spieden and Kathleen O. Blank of the Thomas Alva Edison Foundation; Edgar Genmell of E. I. du Pont de Nemours Company; Clayton Cronkright and Grove Thompson of Public Service Electric & Gas Company; and Frank Townsend of New Jersey Bell Telephone Company.

Acknowledgment for special help is also due Marion Concutt Manning, who typed the manuscript.

Long days away from home, tramping through industrial plants and talking to public relations men, combined with long hours in front of a typewriter trying to make facts and figures intelligible, made me appreciate more than ever the help of my wife, Dot, and our Jay and Ruth. To them, even more than all others, I am indebted for cheerfulness and encouragement when I needed them most.

John T, Cunningham

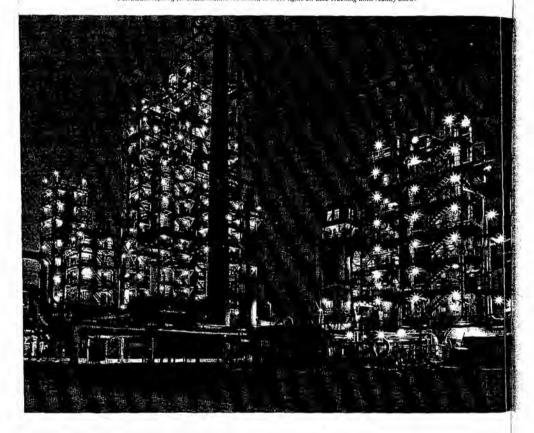
Florham Park, N. J. July, 1954

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DE.

Petroleum refining functions around-the-clock, as these lights on Esso cracking units readily show.





Ask the average man about petroleum. He'll be vaguely aware that it has made a lot of Oklahoma Indians and Texas Texans rich by flowing out of the ground like liquid gold. He'll reckon that something is added, or taken away, maybe, before said liquid gold goes from the soil into his automobile or oil burner. Somehow though, it all seems so far away from the furiously ticking meter on the gas pump.

True enough, no petroleum has been tapped in New Jersey, not enough to gush about, at any rate. Tales of oil prospecting in the South Jersey pinelands seep occasionally into the papers; the fact is that petroleum may yet be found here, a pleasant prospect to keep in mind when crops are slim.

But for the present, liquid gold belongs to the Southwest and Gulf Coast, as far as the wells and gushers are concerned. Nevertheless, Texas oil men have more than a passing interest in New Jersey refineries—although in all fairness, seven billion gallons of crude oil one way or another might not even be noticed in Texas.

Seven billion gallons is not a figure plucked out of thin air; that's the approximate annual capacity of refineries clustered within two small New Jersey areas, one close to New York, the other within easy reach of Philadelphia. Seven billion gallons is enough to put the state in sixth place nationally in the petroleum refining industry, and adds up to astounding New Jersey-made quantities of everything from aviation gasoline and fuel oil to asphalt and wax. Petroleum refining capacity is expanding rapidly in the state, too, being now nearly double the capacity of 1945.

The reasons for New Jersey's vital relining role are easy to delineate; good markets and good transportation. Those reasons have not changed materially in the eight decades since oil men first cast eager glances on the marshlands of Bayonne, close to New York. City's buying public, close to rail and water carriers.

Bayonne had one other thing in 1875, when Prentice Oil Company established the state's first crude oil refinery. Quaint old Bayonne, favorate watering place of the rich and fashionable of New York, had room to spare. Prentice's decision to utilize some of the marshlands troubled no one initially; the line beaches on Newark Bay continued exclusive enough to be called "The Newport of New York."

Then a darkness settled over Constable Hook, caused by the dense black smoke eddying outward from the waste fires of Prentice and other early Bayonne oil neighbors, including Ocean Oil Company, Lombard Ayres & Company and Polar Oil Company. The refiners protested that after taking the valuable kerosene and some machine lubricants from the crude oil, nothing could be done with such objectionable leftovers as gasoline except burn them. Away went the vacationists, no longer would Bayonne sout them.

A young fellow named John D. Rockefeller, along with his associates in the Standard Oil Company of Cleveland, built a refinery in Bayonne in 1877. Within a few months Standard also took over Prentice Oil—20 employees, 600-barrel-a-day capacity and all. John D. and Iriends had stolen a march on the entire industry, getting so close to progressive New York, whose people probably owned the most kerosene lamps in all the world.

Out in Pennsylvania, not far from the wilds of Titusville where Colonel Edwin L. Drake had drilled the world's first successful oil well in 1859, two men set out in 1869 to challenge Standard Oil, Seventeen times Byron D. Benson and Major Robert E. Hopkins drilled deep into the Pennsylvania oil fields; seventeen times Benson and Hopkins found nothing.

Oil flooded from the earth on the eighteenth try and the partners had a pleasant new problem: marketing the gushing riches flowing about their feet. They agreed the best sales country lay at tidewater and thus established their Tride Water Oil Company

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Some of intricate equipment at Esso's Bayway Refinery,

refinery at Bayonne, only to find that competitors controlled the railroads. Accordingly, railroad lines refused to carry Benson-Hopkins crude.

The oil world scoffed when news leaked out late in 1878 that Tide Water had decided to build a 288mile pipeline over the Allegheny Mountains, over the lesser hills of New Jersey and under Newark Bay all the way to Bayonne. Less than a year later, nonetheless, piped crude flowed 110 miles over the Alleghenies to Williamsport, Pennsylvania.

Jersey Central Railroad then agreed to take oil from Williamsport to Bayonne in tank ears, and before the end of 1879 the brash young Tide Water Company had acquired the Ocean, Polar and Lombard Ayres relineries in Bayonne. Standard, shaken by the audacity of little Tide Water, fought back.

John D. Rockefeller and friends had the money to build bigger and better; by 1880 their pipeline stretched 400 miles from gushers at Bedford, Pennsylvania, to Bayonne, being the first pipeline to reach tidewater. The last mile proved toughest for Standard Oil Company, since mountains and rivers could not cause nearly the trouble created by the uncooperative mayor of Bayonne.

Central Railroad bitterly fought the new Standard Oil pipeline. Bayonne's mayor, possibly out of the purest of motives, vetoed a council resolution permitting Standard's pipeline a right-of-way through 30th street. Standard Oil, also possibly with the purest of motives, campaigned actively in the next election; the good people of Bayonne elected a mayor and a council friendly to the oil company.

On the evening of September 22, 1880, the petroleum-minded Mayor and Council passed an ordinance creating a pipeline right-of-way in 30th street A messenger rushed the ordinance to Standard's vards, where 300 men waited in the red glare of their kerosene lanterns. By dawn trenches had been dug, pipe taid and trenches filled in again, even before the city populace (or the Central Railroad) knew an ordinance had been considered.

Tide Water's pipeline finally inched into Bayonne in 1888 and the oil war settled into more or less friendly competition, with room for all. Tank steamers carried refined oil outward in their steel holds and sailing ships put oil-filled wooden barrels in their holds to take abroad. Close to home, kerosene stoves became a popular extension of the warmth of the parlor stove or a summer substitute for the kitchen cook stove. Steam engines and big machines used more and more petroleum lubricating oils instead of the whale sperm or lard oils of an earlier day.

Just over the horizon, if any one listened and believed, a new factor began to chug into the oil landscape. The census writer of 1899 heard, believed and reported: "The recent extraordinary prowth of the automobile industry . . . has stimulated the development of small internal-combustion engines of from three to 40 horsepower."

PETROLEUM

Four New Jersey oil refinerics produced 8,600.000 barrels of petroleum products in that same year of 1899, with 6,200,000 barrels being "illuminating" oil, 1,300,000 barrels being fuel oil, and only 1,100,-000 barrels being naphtha or gasoline (also known variously as "motor spirit," "680 spirit," "boulevard gas fuel" or just plain "petrol").

But horseless carriages didn't turn the heads of good sound oil men. Look at the figures, they said, reasonably enough: only five automobiles built in all of 1895, only 22,000 built in the entire country in 1904. Kerosene, that's our business, they insisted as they expended to tap bigger and better oil fields in the Southwest.

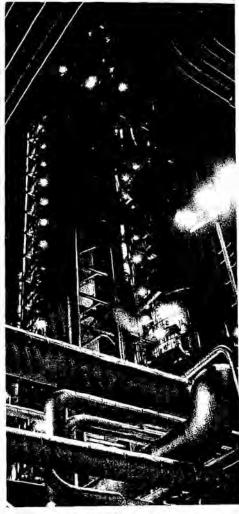
Standard Oil Company and Tide Water employed a total of 3,000 men between them and refined 40,-000 barrels of oil daily in their Bayonne plants in 1904. Bayonne correctly boasted that the longest pipeline in the world-1,800 miles from Standard Oil Company to "Indian Territory"-ended in the Hudson County peninsular city.

Still, congestion moved in on Standard Oil, not only in Bayonne but also at its big Eagle Works in Jersey City. The company looked longingly across Newark Bay and down the Arthur Kill to the marshy farmlands near Morse's Creek in Linden. Late in 1907 Standard Oil Company began to build its sprawling new Bayway refinery

Bayway offered several advantages: room to grow, deepwater transportation, good railroad connections and a terminal on the Tuscarora pipeline which stretched to the oil fields of Pennsylvania. Moreover, the area had good petroleum refining know-how, centered in the old Borne, Serymser Company in nearby southern Elizabeth.

Started in 1883, the waterfront oil refinery of Borne & Scrymser had achieved world-wide markets by 1890 as the firm pioneered in making a wide range of petroleum lubricants to compete in a lubricating market long prejudiced in favor of whale sperm and lard oils. Borne, Scrymser Company boosted its daily capacity from 300 barrels in 1883 to more than 1,000 barrels daily by 1889. Today the company is still operating after more than seventy years in business.

All petrolcum refining in the East suffered in com-



Night work proceeds at Culifornia Oil Company in Porth

parison with Standard Oil's Bayway refinery after the first still was fit there in 1909. Every one recognized the visitess of the enterprise, yet few Linden folks called the plant other than "Tom Glackin's kerosene factory." in dual tribute to the forcefulness of Glackin, the hard-driving, colorful Irish foreman and in recognition of the principal Bayway product, Even in 1909 kerosene dominated the most advanced petroleum refineries.

But grudgingly or otherwise, only the most ardent horse tovers failed to agree in 1909 that the automobile had cone to stay. Gradually the percentage of gasoline distilled from crude oil increased until by World War I the motor fuel had pushed kerosene into a secondary place.

World War I brought fantastically increased demands for refined gasoline and oil; the total export of gasoline rose from 4,600,000 barrels in 1913 to 13,500,000 barrels in 1918. The AEF doughboys jolted over the rutty French roads in motor trucks as much as they walked in the muddy fields. Overhead, the first warplanes sputtered and fought an aerial war that forecast the nature of things to come. This all added up to great quantities of burned gasoline and oil, and, as Linyd George said. "the Allies floated to victory on a sea of oil."

Two factors entered the picture to after New Jersey's refining scups between 1900 and 1920. In the first place, other companies built New Jersey installations to compete with Standard Oil Company and Tide Water, secondly, violent labor unrest in Bayonic seriously threatened the state's petroleum industry in 1915 and 1916.

Bayonne continued a favored spot for oil works. Guif Refining Company built a terminal plant (in effect a warehousing and distribution center) in the city in 1901, and the Texas Company added its terminal plant in 1910. Down along the Delaware River the Vacuum Oil Company thow Socony-Vacuum) built a modern refinery at Paulshoro (Gleucester County) in 1917 with a 20,000-barrel duly capacity. The Warner-Ouinlan Company started a small refinery at Linden in 1912 (which Cities Service bought in 1937).

Bayonne strikes in 1915 and 1916, involving thousands of workers at Sundard and Tide Water, etched themselves into labor history because of the unprecedented brutality accorded the strikers at the hands of known criminals brought in to break up the walkout. Pearl Bergoff, self-styled "King of the Strikebreakers," paid by the companies to lead a frontal attack on the workers, possibly went beyond the instructions of bis superiors. At any rate, three strikers and

a boy died in a five-day reign of terror. Out of the bloodshed came enlightened petroleum industry labor policies, fortunately.

Labor peace made the industry bound ahead, with the state making nearly 25 per cent of all United States refined petroleum products during World War I. By 1919 New Jersey led the country in average number of petroleum workers with 10,178 recorded that year. The value of petroleum products, \$280,995,000, placed the state second only to California in the country as a refinery center in 1919.

Postwar refining stimped throughout the country in 1923 as all European refineries, particularly Russin's, picked up capacity and added to the huge American surpluses of refined gasoline and fuel oils left over from the war. A definite indication of hard times manifested itself in two prices announced at the refineries: Gasoline, 7½ cents per gallon; kerosene, 7½ cents per gallon; kerotant close in cost since Henry Ford put the automobile within reach of most Americans.

Not that the petroleum industry faced collapse. Standard Oil had pushed its production to 180,000 barrels daily at its Jersey City, Bayonne and Bayway plants (80,000 barrels daily at Bayway alone). Only Tide Water came close to Standard Oil in production with 36,000 barrels refined each day in Bayonne in 1923. Figuring every barrel to hold 42 gallons, it can be seen that the refinences kept busy.

Increased use of home oil burners in the 1920's got the petroleum industry rolling briskly; gasoline pushed the industry into high genr. Pressure stills made more and more gasoline available out of each barrel of crude oil, and, particularly pertinent, led to continuous operation without frequent shutdowns to clean equipment.

"Cracking" coits, designed to refine crude oil under very high pressure and great heat, began to replace the old low-pressure stills as the 1920's wore on. For the user of gasoline those coits meant a higher grade product. Charles A. Lindbergh, when he pointed the propeller of his "Spirit of St. Louis" into the wind in May, 1927, had the secure feeling that his improved 75 octane gasoline would help him make Paris. ("Regular" gasoline at any standard-brand pump today has an octane rating well above that of the fuel used by Lindbergh.)

By 1930 New Jersey had begun to slip in relation to the rest of the country in petroleum refining. Not that the state's capacity declined; rather it increased, but not as rapidly as Texas and California, where oil men built new refineries close to the spouting wells. Still, New Jersey continued fourth in refining capacity

nationally in 1940, with a daily average of 255,950 barrels.

PETROLEUM

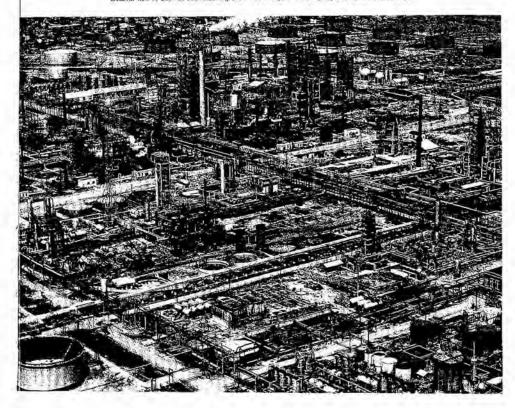
World War II again threw New Jersey and all Eastern refineries into welcome relief. Nazi submarine packs haunted the Allantic coast and sent loaded tankers plunging to the bottom. Surging seas washed over the wreeked tankers and splashed great black crude oil smudges over the entire Jersey coast as grim reminders that not all the war was being fought 3,000 miles away.

The government placed its fullest resources behind building the "Big Inch" and "Little Inch" pipelines from Texas to Linden. The 1,363-mile "Big Inch" came first, and that 24-inch pipe brought oil from Longview, Texas, to Linden in August, 1943. When the last oil flowed through the "Big Inch" on October 15, 1945, the pipe had brought 260,750,000 barrels of petroleum (including refined products as well as crude oil) to the East.

"Little Inch," numed because the 20-inch diameter of the pipe was less than its predecessor, stretched overland 1,475 miles from Beaumont, Texas, to Linden This line held 2,000,000 barrels of oil, flowed at the rate of 122 miles per day and took 12½ days for a given product to flow from Beaumont to Linden. The first petroleum product via "Little Inch" reached Linden on March 2, 1944, in the midst of a severe fuel oil shortage—and, ironically enough, throughout the first day a naphtha cleaning fluid ran from the pipe. Happily, fuel oil for North Jersey burners soon inched its way through the state and out of the line at Linden on March 3.

Natural gas replaced petroleum products in both "Inches" after prolonged legal bickering following World War II, but the two great pipelines had served the nation well. Not only did they bring fuel oil to cold New Jersey homes, they also brought aviation gasoline for relatively easy transshipnient to fighting

General view of Bayway Refinery, largest in New Jersey, with a daily capacity of 150,000 barrets.





Drawing crude oil sample from a Bayway storage tank.

men in Europe. Moreover, the much-debated pipelines also made a substantial profit for the government, a fact usually overlooked by critics of the two "Inches."

The petroleum industry, matured by the depression and tested by World War II, entered the years following V-J Day with facilities far beyond the comprehension of those who lived in the days of Tom Glackin's kerosene factory. For one thing, refining reached a new high with the introduction of cutalytic units, a development whereby a catalyst does most of the "cracking" (refining) of crude oils into gasoline under lower pressure, thus permitting the manufacture of high quality gasoline at low cost. Catalytic cracking also permits the recovery of more gasoline per barrel of enide oil. Today Esso's Bayway refinery has the biggest "cat" cracker in the world, while another "cut" at Tide Water in Bayonne has established world records for the longest initial run and the longest continuous runs for a cracker.

New Jersey's role in World War II also caught the attention of two other major companies, California Oil Company and the Texas Company, which noved refining operations into the state in 1947 and 1940, respectively. Together these plants represent the very newest thing in oil refining and between them they have increased the state's refining capacity by 125,000 barrels daily.

California Oil came to New Jersey by buying out the old Barber Asphalt Company, which since 1903 had been making asphalt at its Perth Aniboy plant. Since 1947, California Oil Company has spent \$100.000,000 expanding the plant's capacity to about 60,000 barrels of crude oil a day. Everything new has gone into the plant—"cat" cracker, tankers, storage tanks, stills—to develop the refining of Calso products in New Jersey, California's products range from asphalt to aviation gasoline, with motor gasolines, kerosene, fight fuel oil and banker fuel oil between those extremes.

MADE IN NEW JERSEY

Texas Company went across state for its newest tefinery, choosing 1,600 acres of wide open land spread over 2¼ miles of waterfront on the Delaware River at Westville, just south of Canden. The spreading site had once been Washington Park, an amusement place noted throughout the Philadelphia-Canden area from 1895 until fire leveled the park in 1900.

Starting completely from scratch, as no other New Jersey refinery has done since the turn of the century (even Calso incorporated the old Barber buildings into its operations at Perth Amboy), Texas. Company built what has been called a "picture refinery" because of the neat layout of buildings, crackers, stills and storage tanks. The new refinery went "on stream" (began operations) late in 1949.

Every refinery in New Jersey is in the midst of expansion; as one plant superintendent put it, "Refineries are always expanding." The state's refining capacity has nearly doubled in the past decade, from a daily capacity of about 250,000 barrels in 1945 to more than 475,000 barrels today.

Esso's Bayway plant is far and away the biggest refinery in New Jersey, with a daily capacity of 150,000 barrels (42 gallons each) or 6,300,000 gallons daily. One fact concerning the Bayway refinery brings home a reason for locating on deep water other than to provide ship channels for heavily laden tankers. Bayway uses enough salt water daily to equal the amount of fresh water needed every day by Philadelphia or Detroit, the water being used to cool refined products after the tremendous heats used in converting crude oil into its usable components. All refineries use great quantities of water, in proportion to their production.

Esso's other major New Jersey refinery, at Bayonne, is a specialty plant, with its major output being asphalt, hibricating oils for industrial uses, and wax. The Bayonne refinery processes 2.500 burrels of tubricants, 5,000 barrels of asphalt and 560,000 pounds of wax daily. Possibly the wax production is the most striking to the average person, particularly when it is realized that Esso makes 20 per cent of the world's annual wax consumption at its Bayonne plant,

Unlike Esso's specialization, Tide Water makes nearly every type of petroleum product in its Baycone refinery (excluding only wax). Tide Water has come a long way since the days when Benson and Hopkins dared pash their pipe line from the mountains to the sea, and now the truly "tidewater" part of the company can handle 75.000 barrels of crude oil daily in Bayonne.

Perhaps the most diversified refinery in the state is that at Paulsboro, where Socony-Vacuum literally makes everything in the petroleum field—asphalt, wax, fuel oils, gasolines, petroeliemicals, Socony-Vacuum is one of the very few refineries in the country processing every product, since most specialize in selected crudes (low wax, low asphalt, etc.).

One hallmark of the petroleum industry in the state is the concentration of research activities within New Jersey, two notable examples being Socony-Vacuum's research laboratory at Paulsboro and the Esso Research Center in Linden. Other companies maintain research activities, too, and laboratory sci-

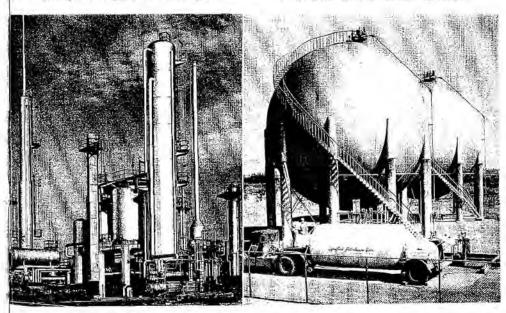
entists within the state have explored, and continue to explore, the petroleum industry in a range extending from the improvement of high octane gasoline to the production of synthetic rubber, synthetic alcohol and synthetic toluene for use in explosives. This phase of the industry will be given broader attention in a later chapter on general research activities in New Jersey.

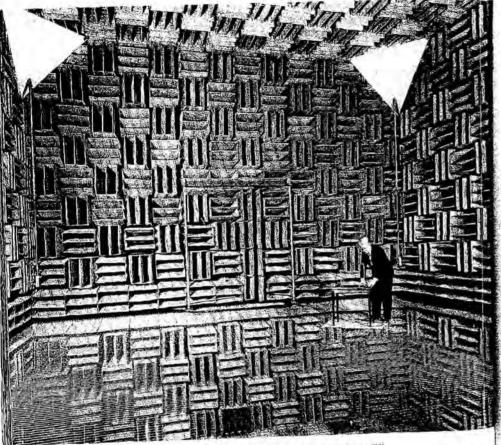
Now, with the petroleum industry well past the midpoint of the twentieth century—yet less than a century since Colonel Drake struck oil in Titusville. New Jersey is solidly established as a leading petroleum state. Its seven refineries have a total capacity exceeding 475,000 barrels daily (42-gallon barrels). This figures out annually to about seven billion gallons of every known petroleum product.

Yet, not one drop of oil comes from a New Jersey oil well at the moment—and don't buy any stock in a company proposing to tap an alleged oil field in the state. At least, not without consulting your broker. Oil wells in New Jersey are possible but, at the moment, not probable.

Thermal reformer at California's Perth Ambay refinery.

Two of Tide Water's great round storage tanks at Bayonne.





Smunt is tabon in unique acoustical chamber at Bell Laboratories in Murray Hill



RESEARCH

Billd a hener mouserup, the old advice goes, and the world will beat a pathway to your door. Shake that truism well, blend it with a bit of The-World-Is-At-The-Crossroads theme and there emerges the traditional commencement address, with every word just as true today as it was fifty years ago.

The fact is that the world has always sought the figurative better mousetrap, or, more particularly, the type of mind capable of developing it. The same uncanny mental processes required to improve methods of snaring a rodent can also make a superior jet plane or a better antibotic.

Today, of course, mice serve far greater scientific purposes than merely testing new traps, but the basic philosophy of the improved mousetrap is still sound, sound enough to make industry beat a very significant pathway to the bright doors of hundreds of research laboratories spread throughout New Jersey.

No other state tops New Jersey in the magnitude and diversity of research carried on in more than 400 laboratories located within the state. The search for betterment is everywhere in New Jersey, it is found in unprepossessing old huidings in the cities and in shiny new laboratories on the most handsome of the suburban hills.

Somewhere between 12 and 15 per cent of all United States research is carried on in New Jerkey; no one can say for sure how much. Security regulations, combined with the elusive nature of the quarry, make it hard to ensure research in exact statistics. Still, settle for 12 to 15 per cent—and that means about one-seventh of all national research is crammed within a state occupying only 1/370 part of the country.

Research and its close cousin, development, are the real keys to the current level of \$5,000,000,000 in value of goods manufactured annually in New Jersey. More important, work going on in laboratories today bodes well for temorrow; research is to industry what spring rains are to summer pasturelands. It's

almost axiomatic to say that where money is spent on research, there industry theires.

The entire concept of the research laboratory as it is now known is a phenomenon of the last thirty gents, if there are industrialists who begindge the importance of research, their voices are not loud. Quite samply, and over and above altraism, in today's competitive economy a company either spends money on research or fulls behind its rivals.

Two things have particularly characterized new research laboratories in the past two decades—quiet locations in the country, and a gathering together of many scientific and technical skills to work as a team These are not new notions. Thomas A. Edison's heralded Menlo Pask laboratory had both of those desirables way back in 1876.

There are many who believe that Edison's greatest contribution to the world was his conception of a bighly organized research laboratory. No one else had succeeded before, 1876 in drawing together bright minds and skilled hands to put inventiveness on a production line basis.

Edison deliberately sought a peaceful spot as the location of the world's first research laboratory. He found it on a high hill in Menlo Park, then sanguinely announced his intention to speed up inventing. He envisioned a minor invention every ten days, a major invention every six months.

Thus, out of the mouse-filled garret and into bright clean rooms came the scientist. Edison surrounded himself with high level knowledge. He hired chemists, engineers, model makers, theoretical scientists, matthematicians and skilled mechanics. His force totaled sixty-one men, dedicated to the cooperative pursuit of invention and presumably happy to be in the quiet Jersey hills where strawbernes bloomed in June.

Team-work paid off, and more than 300 separate patents resulted from work at Menlo Park between 1876 and 1882. Three of those patents—for the phonograph, the electric lamp and the "Edison Effects of the phonograph."

fect," the forerunner of the radio tube, clearly exched Edison's name into the annals of science. Certainly Edison had no corner on research. Edward Weston's Newark laboratory, for example, pioneered American measuring instruments. Scientists at Kenvil advanced the knowledge of powder making. With rare exceptions, however, industry did little research within its own domain. Why improve methods or products, industrial heads argued, when what grandfather bought stiff sold readily to his grandsons? Industrial historians credit E. I. duPont de Ne-

mours Company with establishment in 1902 of the first important American industrial research laboratory. DuPont chose a New Jersey location for that installation too, setting up the new facility at its Repauno dynamite plant in Salem County.

It can hardly be said that the duPonts plunged recklessly into research, since only six young chemists crossed the river from Wilmington to Repauno, No particular favors were accorded the scientists, either. They carried all their equipment with them-iwo small cases of classware, a few chemicals and a micro-

World War I shocked industry into intensified research, particularly after national leaders awoke to the fact that Germany's government-encouraged laboratories had given the Kaiser a big drop on the world. Out of the first major world war came the real seeds of organized industrial inquiry. Still, research expenditures in the entire United States in 1920 probably did not exceed \$300,000,000 per year.

World War II, for all its tragic implications, finally brought American research and development into full flower. Laboratories found answers to seemingly insoluble problems. Ready supplies of government money encouraged even very small firms to expand research programs. Germany's admitted scientific skills called for an all-out laboratory fight, a fight every bit as important (even if not as personally distressing) as struggles in front-line loxholes.

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OF THE PARTY OF TH

Federal Telecommunications "Laboratory In The Sky,"

A HE WE T

Today industry has expanded research expenditures ten-fold over what they were three decades ago. Industrial survival is as simple and as expensive as that at the mid-point in the twentieth century. The billions of dollars spent for scientific know-how have paid off; more than 50 per cent of products in common use today were not even known fifty years ago.

Somewhere between \$150,000,000 and \$200,000 -000 is poured into New Jersey research installations every year. Those sums are spread over a wide geographic area, into about 150 separate municipalities. They are spread over a broad product area, too-food, television, petroleum, electronics, nerodynamics, communications, textiles, metals, explosives, pharmaceuticals, chemicals, plastics, rocket motors, electric lamps, air conditioning. Whatever the product, it is almost surely undergoing research in New

RESEARCH

The mirplane is a good example of what New Jersey science is doing about tomorrow. Engineers who have pierced the sound barrier owe much to New Jersey nircraft skill.

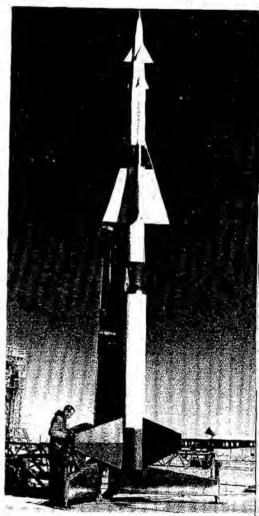
Curtiss-Wright Corporation has centered a sizeable portion of its search for better airplane engines and propellers in New Jersey. The firm's new power inquiry is spread through turbo compound motors, turbojets, and the ram jet. The ram jet (the "Flyine Stovepipe") is the latest announced Wright engine advance. Capable of withstanding temperatures as high as 3,000 degrees F., the "Stovepipe" has no moving parts and is at maximum efficiency at speeds between 1.500 and 3,000 miles per hour. It is reasonable to assume that engines destined to make the ram jet oldfashioned are on the drawing board or in engineering minds at Curtiss-Wright

Curtiss-Wright is not the only one bent on putting the mere speed of sound into the aeronautical footdragging class. The M. W. Kelloge Company in Jersey City is in the midst of highly-secret work with ram jets. Up in the hills of Morris County, Reaction Motors Incorporated is deep in rocket research and development.

Reaction rockets already have thrust experimental aircraft far beyond the speed of sound and have carried Navy Viking rockets aloft at 4,100 miles per hour. Again, those are announced achievements; obviously rocket science looks ahead. Reaction Motors will base its look ahead in a new \$2,500,000 research laboratory under construction in Denville near the Rockaway Township line.

Every jet or rocket development brings incredible new problems, of course, and the James Forrestal Research Center at Princeton University is concerned with those problems. More than 500 Forrestal Center scientists and assistants are easing the rocket into the future, and finding that the land at the other side of the Sound Barrier has completely repealed most of the laws relating to such old-fashioned airplane speeds as 300 to 400 miles per hour.

Since mankind has only just erashed the Barrier, there is much to be learned and much to be developed if supersonic speeds are to be of any practical use. Forrestal Research Center is studying rocket and jet motors in specially-constructed buildings on the shores of Lake Carnegie. Two unique wind tunnels can simulate altitude from sea level to 100,000 feet.



NIKE, antimiresaft missile whose "brain" was developed by Bell Lubaratories researchers in Whitmany.



Mechanical "smoking" machine tests cigarette action at P. Lorillard in Jersey City.

Princeton scientists are working closely with government and military agencies and with private industry —and aircraft's future rides as much at the Forrestal Center as it does anywhere in the world.

This onslaught on space calls for new metal alloys, new instruments, new fuels, and New Jersey laboratories are meeting the challenge. New metals and alloys are under particularly intensive study at the recently-completed \$1,200,000 South Plainfield laboratory of the American Smelting and Refining Company. New instruments are being readied by scientists in laboratories of such companies as Weston Electrical Instrument Company in Newark and Bendix Aviation Corporation in Teterboro.

Fuel to drive the aircraft of tomorrow is a primary

concern of petroleum researchers, who must at the same time concern themselves with that greater portion of mankind content to roll along in automobiles. Fuel research leads directly to the door of the Essa Research Center in Linden, probably the world's leading petroleum laboratory.

The automobile fathered the Esso Center, although the twenty-six men who started research and development work for Standard Oil Development Company back in 1919 certainly never envisioned the facilities now available at Linden. Nor, for that matter, could they possibly have foreseen the changes a mere thirty-five years could make in petroleum outlook.

Rolling years have brought better gasolines and lubricants, with many of the advances directly trace-

Standard Oil scientist uses electron microscope in experimentation with minute items.

able to work at Linden, Improved methods of cracking and better catalytic processes owe much to Esso contributions in Union County. The governing theme at the Esso Research Center is creation of energy, naturally, but work at Linden also has spread into many other channels.

During World War II, long years of work at Linden on synthetic rubber brought Butyl to a rubber starved nation. Today Butyl is used almost exclusively in this country for the manufacture of automobile inner tubes. Similarly during World War II, Esso scieniists perfected the volatile fluid used in fire bombs and pioneered in development of smoke screen generators.

While work must continue to improve gasoline for

the road-minded citizen, Esso Research Center also is deep in the jet age. Recently the Center announced a new jet lubricant, which does not evaporate at high temperatures or congeal at low temperatures. Another horizon in the Linden laboratory is petro-chemicals—the development of petroleum by-products into useful chemical compounds.

By devoting a major share of attention to the chemistry of petroleum, Esso Research Center is right in the midst of what might be the greatest research movement of all times, the development of new products through chemistry. Nothing has highlighted the advance of controlled scientific inquiry like relatively recent research in the fields of organic chemicals, pharmaceuticals, plastics, paints, explosives and many

Typical of university-like atmosphere of research labs is Essa Research Center.



Flaming ram jet is part of Esso research project undertaken for U.S. Navy.



Butyl-covered glass cloth is tested in Esso rubber section for tensile virength prior to use in trigation ditch.

other chemical commodities.

Fortunately for New Jersey, since there is every indication that chemical research may hold in its test tubes much of tomorrow's way of life, the state is the center of multifold chemical laboratories. Most of these are centered in the teeming industrial areas of Essex, Union. Somerset, Hudson and Middlesex counties.

Chemical research picked up pace antazingly in the early 1930's, in the midst of a depression that made many an "all-eggs-in-one-basket" industrialist collapse. At a time when many industries wondered the sun would ever shine again, chemical houses used their laboratories to start rolling back the clouds.

Untold millions of dollars of risk capital went into Jersey pharmaceutical research. Merck & Company started a vast program in 1933, and soon afterwards other pharmaceutical houses began exploring their own destinies—firms like Schering in Bloomfield, Hoffman-LaRoche in Notley, Warmer-Chilcott in Morris Plains, E. R. Squibb in New Brunswick. American Cyanamid in Bound Brook, and Ciba Pharmaceutical Company in Summit, to mention a few.

Thus capital risked at the worst economic period in all American history, paid off, and doubly, in great new life-saving miracle drugs and in profits for the investors in research. The Jersey-developed health-givers—sulfa drugs, streptomycin, cortisone, vitamins, hormones—are well known. Increased company income can be proved as well, recently, by way of illustration, the Schering Corporation of Bloomfield announced that 65 per cent of its gross 1953 income came from products developed since 1948.

Du Pont company's research is a hallmark of the twentieth century, and New Jersey remains vital in du Pont's exploration of hetter living through chemistry. Du Pont explosives research is still centered at Repauno and smokeless powder research is carried out in laboratories at Gibbstown and Carney's Point. More than 1,000 persons are engaged in du Pont's organic chemistry research, all of it located at Deepwater Point in Salem County. Color research is centered in Newark, photo products research is based in Parlin. So du Pont recognizes the value of New Jersey as a research spot as much as it did in 1902.

Much of the nation's high explosive know-how remains alive in New Jersey, at du Pont installations, at Hereules Powder Company in Kenvil and at Pientinny Arsenal, Lake Denmark Naval Ammunition Depot and Farle Naval Ammunition Depot.

Much of chemistry's attention is now devoted to plastics, and in that synthetic area New Jersey is a national leader. A great deal of looking ahead in plastics is going on in laboratories like those of Celanese in Summit, du Pont in Arlington, Hercules at Parlin and Burlington, Union Carhide and Carbon Corporation (Bakelite) in Bloomfield, American Cyanamid in Bound Brook, and many other companies.

It goes almost without saying that the many firms contributing to New Jersey's billion dollar annual chemical business are heavily engaged in research. Their laboratories are well equipped and numerous. To mention just a few, there are important laboratories at American Cyanamid in Bound Brook, Nopeo Chemical Company in Harrison, Allied Chemical & Dye Corporation in Morris Township, General Aniline & Film Corporation at Grasselli, Heyden Chemical Company in Phillipsburg. There are many others; these are micrely representative.

Equally exciting is the future facing the electronics industry, and here New Jersey probably is also the national leader. The state has been out in the fore-front of electronics development traditionally, at least partially because the Signal Corps center has been located in Monmouth County since 1917. Obviously

RESEARCH

much communications know-how emanated from old Camp Vail and its latter-day successor, Fort Monmonth.

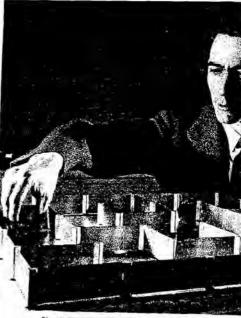
Fort Monmouth still is the national center of secret army communications research, and its presence has given impetus to several private laboratories in Monmouth County. Much electronics research also is carried on by private industry in many state locations and New Jersey has several of the world's best-known electronics-tinked research installations.

RCA's David Sarnoff Research Center at Princeton is world famous for its work in radio, television, acoustics, electronic tubes and most other phases of electronics. The laboratory was established in 1942 to draw RCA research together in one spot; today more than a thousand persons work in the huge center.

Much of RCA's development of color television took place at Princeton, and recently the center displayed a method of recording TV pictures on magnetic tape in both black and white and color. The center also announced this year an atomic electric battery, about the size of a cigaret filter, which converts atomic energy directly and simply into small but

One of tests to develop better fibers at Botony Mills.





Electrical "monse" seeks "cheese" in Bell Labs maze.

useable quantities of electric energy

Allen B. DuMont Laboratories is important in electronies, naturally, both for past developments and for work still in the blae-print stage at the research facilities in Passaic. Not far away, in Nulley, Federal Telephone and Radio Company's "Laboratory in the Sky" is a major link in the world-wide chain of experimental laboratories maintained by J.T.&T.

Today, behind the closely guarded doors of Federal's laboratory, hundreds of scientists and technicians are at work on problems pertaining to radar, television, microwave communications and many classified projects. The "Laboratory in the Sky"—a 300-foot aluminum-sheathed microwave tower—is the first structure of its kind ever built and dedicated to teleconnumications electronics.

Yet, of all the research laboratories in New Jersey, and possibly in all the United States, none is better known than Bell Telephone Laboratories in Murray Hill. Opened in 1942, Bell's Murray Hill research work now covers 450,000 square feet of space and occupies the time and thought of nearly 3,500 persons.

As should be expected, the work at Murray Hill

One of the best-known research finds of modern times is the transistor, invented at Murray Hill by a team of three scientists. The tiny, rugged transistor came out of persistent and pure research, and since Bell Laboratories first announced the device in 1948 the transistor has been found capable of performing efficiently nearly all the functions of an ordinary vacuum tubes.

Murray Hill scientists continue to explore nearly every avenue of communications and sound. The transistor is widely used in telephonic communications, but manufacturing licenses have made it available for a wide range of electronics use. From Murray Hill will continue to come better telephones and switchboards, better electronics devices, better sight and sound. Possibly even a better mousetrap may come from Murray Hill Bell Laboratories in 1952 developed a better electrical "mouse," a two-inch bar magnet with copper whiskers. The "mouse" can quickly solve more than 1,000,000 different mazes to find his "cheese," and he's highly useful routing calls through complex telephone switchboards.

Bell Telephone Laboratories have been in New Jersey since 1925, coming, first to a small laboratory in Whippany from where the first television program was broadcast to New York in 1927. The Whippany phase of Bell Laboratories work seldom gets the headines alloted to Murray Hill), since most of the work of the 1,500 Whippany employees is highly classified. It has been announced, however, that the Whippany laboratory developed the electronic "brain" of NIKE, the anti-aircraft missile with the uncanny ability to track down and destroy a maneuvering enemy plane.

The future of the world seems linked to nuclear fission and New Jersey is certain to play a continuing role, just as it did in the production of the first Abonib. As an example, two scientists, searching for a better lamp filament in the Westinghouse Lamp Division at Bloomfield, developed pellets of pure uranium in 1922, Twenty years later, when three fons of uranium were needed for the Manhattan Project in 1942. Westinghouse scientists found ways of boosting uranium production at Bloomfield from a few ounces a day to 500 pounds daily.

Another vital World War II nuclear contribution came from the Princeton University campus, where

in 1935 Professor Hugh Scott Taylor "boiled" sevenly-five tons of water down to ten drops of heavy water containing one part of heavy hydrogen. Taylor and his co-workers labored around the clock in the Frick chemical laboratory at Princeton to produce heavy water for the Manhattan Project. The process is still used loday.

Work on New Jersey college campuses is essential in the state's over-all research picture. Many highly specialized projects are in full swing at Princeton, Rutgers, Stevens and the Newark College of Engineering. The college researcher has one special advantage: he can usually pursue his research with only casual concern as to whether his work will mean the difference between dividends or no dividends.

The industrial world of the next decade or the next several decades will not find New Jersey wanting, since research really works in terms of tomorrow. It has been estimated that all national chemical sales in 1970 will find 60 per cent of their gross dollar value in products not even on the market today. The Sound Barrier has been only pierced, not riddled; there is much aliead there for the aeronautical industry. Petroleum research is aiming at new horizons. Alomic energy is seeping into wider New Jersey industrial usage today.

Research begets research, too. A new conception in the world of aerodynamics, for example, may call for a dozen new conceptions in allied fields. There is an interchange of thought (within patent limitations and government security regulations) among scientists, whose essential goal is truth rather than dollars. New Jersey's acknowledged research orbit is destined to attract even more research.

Industrial research today goes far beyond immediate profit, although quite naturally most business laboratory work must have its specific goals related to the balance sheet. However, a large portion of all industrial research workers engage in searches for basic truths which might or might not have dollar value. The well-run research laboratory knows when to stop research before it becomes a bottomless pit or a dry well, however.

Often basic research leads to important new discoveries through chance, through serendipity, the art of finding things you are not looking for. Edison, for example, "found" the phonograph while seeking a better means of recording telegraphic messages. Westinghouse scientists found an important atomic need while looking for a lamp filament. Recently, Esso Research Center researchers found SR-406, an extraordinary fungicide, while looking for an insecticide.

Researchers long since have proved their worth to industry, through benefitting mankind generally, through making stockholders happy specifically. Accordingly, researchers today get the best: excellent equipment, trained co-workers, universitylike buildings set among rolling hills. Not that all research work is carried on in the country air; as a matter of fact. Newark has fifty-seven research laboratories within its bounds, and if there is one thing Newark cannot claim, it is clean, fresh country air.

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One important research element which gets virtually no public notice is the importance attached by scientists to the specialized libraries maintained by laboratories. Even the smallest laboratory maintains a minimum of 500 books, and Bell Telephone Labotatories has 45,000 catalogued books on its shelves. It's anybody's guess, but it is likely that close to 3,-000,000 highly technical books are available to laboratory workers in New Jersey.

Industry ever worries about what the morrow will bring. No economist has yet made his mark by compounding the formula: industry plus research equals continuing prosperity. Yet, it seems sound; industry plus research pulled many a firm out of the Great Depression. The corollary of course, is that industry divorced from research must collarse

Accordingly, with The-World-At-The-Crossroads seeking a young man who can build a better mouscirap, it is economically comforting to know that New Jersey has the research know-how. Tomorrow can't help but be better, whether or not you hold stock in an industrial concern.

RECEIVED

BAYONNE INDUSTRIES, INC.

FOOT OF EAST 22ND STREET BAYONNE, NEW JERSEY 07002



PHONE: 437-2200

January 31, 2001

Mr. Michael Kenney New Jersey Department of Environmental Protection Division of Responsible Party Site Remediation 401 East State Street, CN 028 Trenton, New Jersey 08625-0028

Re: Fourth Quarter Status Report (for October, November, December 2000)

Bayonne Industries, Inc., Bayonne, New Jersey

Dear Mr. Kenney:

Bayonne Industries, Inc. (BI) presents herewith the quarterly status report for the Westside Waterfront Interim Remedial Action (IRA) effort and relevant activities in the period October 1 through December 31, 2000. The Westside Waterfront (WWF) IRA provides for the monitoring and extraction of free product from five recovery wells and interceptor trench sumps which were installed at-risk by BI to control the migration of free phase product into the Kill Van Kull in the vicinity of Pier 1 and Pier A. This continues to be a very successful control initiative and the focus is now on long-term remediation of substantially contained residuals.

We also provide in these quarterly reports the status of our site-wide free product monitoring on ground water, of Co-Gen area recovery activities, and of activities associated with the Platty Kill Pond and Canal. In these reports we try to keep your office current as well on the interim status of other Memorandum of Agreement (MOA) actions. We understand that your receipt of this interim information does not imply particular approval on your part of all of our initiatives since such will be sought separately in a manner consistent with the guidelines for the formal submission of such requests. However, we feel it is useful to give you this status on an informational basis and your continued review of and response to these reports is appreciated.

Summary

The Westside Waterfront

a. <u>Product Recovery</u> - Free oil (product) recovery rates at the WWF have decreased from the third quarter, a routine experience due to the temporary system shutdown and draining necessary to prevent winter freezing damage. Free-product observed shoreward of the HDPE liner continues to diminish and product recovery behind and at the ends of the liner barrier is proceeding apace. Any potential for residual

product seepage toward the Kill Van Kull is monitored on a regular basis; there has been no indication of renewed exposure on this front.

b. <u>NJDOT Storm Sewer</u> - The closure of the NJDOT Storm Sewer was completed during this quarter. A section of the NJDOT Storm Sewer was excavated adjacent to the HDPE liner. A new section of HDPE liner was put into place where the sewer formerly penetrated a section of the waterfront barrier curtain. The liner seams were sealed with clay and the area backfilled. This work completes the perimeter control of free product migration towards the Westside Waterfront.

2. Platty Kill Pond

The Remedial Action Work Plan for the Platty Kill Pond (PKP) was submitted to the NJDEP on December 20, 2000. The design includes the installation of a containment barrier wall around the entire PKP, stabilization/fixation of the residual materials within the pond, filling of the remaining void and capping, implementation of the provisions of a restricted Deed Notice, and remediation performance verification. Forward engineering as outlined in the RAWP has been initiated at risk pending formal Department approval of the RAWP.

3. Platty Kill Canal

A soil-boring program at the Platty Kill Canal (PKC) is scheduled to start in January 2001. The objectives and scope of work were described in the Remedial Investigation Addendum Report for Sampling Clay-Till, which was previously submitted to your department. The primary objective of the program is to delineate the low permeability clay-till under the canal. Shelby tubes and vibrocore samples will be collected from the clay-till layer and the samples will be submitted to a laboratory for analysis of permeability at several locations.

4. Co-Gen Product Recovery

The pilot operation of the recovery system at the Co-Gen facility began on November 21, 2000. The system consists of two recovery wells, an oil/water separator and treatment of the water phase in the plant water treatment system. Oil is collected and recovery rates and volumes will continue to be reported in these regular Quarterly Reports.

5. Free Product Investigation Work Plan

The work outlined in the Free Product Investigation Work plan (FPIW) resumed in July with a different cone penetrometer (CPT) contractor. Yard 4 was completed after 62 probings and several incidents where the CPT equipment was damaged. Free product investigation in other areas will continue after renegotiating the contract terms with the CPT contractor. After review of the Yard 4 results, a decision will be made as to whether

proceed with the CPT as a screening tool, or to proceed with a more conventional approach. In either case a report is being prepared that will summarize the results of the CPT work to date.

6. Chromium

The BI site has been formally designated as one of the "orphan sites" with chromium contamination for which NJDEP is taking the lead on control. Another investigatory round is about to begin and BI will collaborate in a manner that does not compromise the concurrent FPIW work.

Detailed Commentary

1. Status of Westside Waterfront Product Recovery

Product recovery at the Westside Waterfront observed in the October through December 2000 Quarter was slightly below average. This is depicted on the Product Recovery Summary graph (Figure 1) and is partly due to the winter shutdown on November 20, 2000. A total of 514 gallons of free-phase product were recovered during the period of October 1 through November 20, 2000. This brings the cumulative total recovered to approximately 42,030 gallons since August, 1995. The collection rate is apparently linked to climatic conditions and where it is as yet premature to talk of downward trends, there are indications that we are approaching that point.

Regular inspections of the Waterfront and liquid level measurements from the monitoring wells and recovery sumps in the vicinity of the WWF continue to be conducted by IMTT personnel. These measurements of fluid levels made between the beginning of July 2000 and the end of September 2000 indicate relatively low product accumulation thickness in the recovery wells and sumps in proximity to the trench. Only limited differences in product thickness measurements made during both high and low tide are observed in the monitoring well network, as had been previously the case. Groundwater contour maps for two events, high and low tides and are included as Figures 2 and 4 respectively. A Water Level/Apparent Product Thickness Measurements summary for all wells at the WWF is also included here as Table 1 and Table 2. The thickness of free petroleum hydrocarbon as measured in the monitoring wells is considered here an apparent thickness rather than a true or formation thickness of the same product located beyond the well and resting on the water table.

Apparent product accumulations at the waterfront are illustrated in Figures 3 and 5, Apparent Free Product Thickness Westside Waterfront Maps. Beyond the HDPE Liner ends (at the gaps), Recovery Wells are now in place and operational at the east and west ends of the product curtain (the 4J Building Gap and near Walter's Bridge). As indicated in the tables, product has been obtained from these wells, particularly that in the vicinity of Walter's Bridge indicating the merit of their placement at these locations.

2. NJDOT Storm Sewer Closure

Property transfer of the NJDOT Storm Sewer was consummated in June 2000. As discussed in the October 20, 2000 Quarterly Report, BI conducted field investigations in the summer to determine the potential impact of closing the NJDOT Storm Sewer. The field investigations determined that water levels in the sewer were still being tidally influenced even after closing the tide chamber check valve. This is inconsistent with what was anticipated and indicated a leak in the lining the NJDOT installed in the sewer to prevent containment migration.

The NJDOT sewer line was closed as follows:

- a. The tide chamber and manhole 8 were filled with concrete. This was completed to prevent water from the Kill Van Kull and groundwater infiltration in the NJDOT storm sewer from flooding the work area.
- b. After the concrete cured, a section of the NJDOT storm sewer was excavated. During the excavation it was determined that the integrity of the NJDOT storm sewer liner was compromised and not properly sealed into the tide chamber. Specifically, the concrete outer pipe was approximately 2- feet short of the tide chamber and the inner HDPE liner was not sealed at the chamber (see Figure 6). This would explain why the water level in the NJDOT storm sewer continued to fluctuate after tide chamber check valve was closed.

The section of the NJDOT storm sewer was then removed.

- c. The excavation was then expanded to expose the previously installed HDPE barrier wall. Plywood bracing was lowered into the excavation and joined to the existing barrier wall. New 80 mill HDPE liner material was installed on the landward surface of the plywood. The HDPE liner overlapped the existing liner and seams sealed with clay. Clean fill documentation for the clay is attached.
- d. Three quarter inch gravel was placed into the excavation to allow product recovery along the barrier wall. The area was then backfilled with excavated soil. Excess soil was disposed offsite and disposal documentation is attached.

At this time it is believed that the measures implemented effectively contain free product in this area of the waterfront.

3. Platty Kill Pond

Most recently we have undertaken forward engineering tasks to determine a final selection for a perimeter hydraulic barrier around the PKP. The details of this have been

formally submitted to your office in the RAWP. Preliminary findings indicate that the sheetpile barrier is preferred to the grout wall containment solution. A final decision will be made with consideration to your pending comments on the RAWP.

The RAWP includes an aggressive schedule of forward engineering tasks with several critical path items that we request your team's feedback on prior to final approval. The feedback that we would like to receive and discuss during our meeting tentatively scheduled on or about February 14, 2001 includes the following items:

- Containment wall selection and NJDEP approval criteria
- Sludge mixing approach (for permit considerations)
- · Stabilization validation approach and criteria
- · Soil reuse plan approach for canal and site wide materials
- · Post remedial monitoring approach

4. Platty Kill Canal Sampling and "Hot Spot" Definition

Adherence to the demanding calendar prescribed in the PKP RAWP and the PKC RASR will require particular attention to several critical path elements. Several of these depend directly on the State's review calendar. An informal review of these can take place at an anticipated mid February meeting with DEP staff. Further investigation of the continuity of the clay bottom at the Canal is being undertaken in early January as part of an RAWP preparation by the BI-ExxonMobil team. The Department has reviewed the particulars of this effort.

Additionally, a rational approach to delineating "hot spots" in the canal sediments for which removal and treatment are appropriate, has been presented to the department earlier and is included here in as Attachment A for review and discussion during our upcoming meeting.

The hot spot delineation is based on the containment solution proposed for the PKC and the solidification/stabilization and containment solution proposed for the PKP. The NJDEP Impact to Ground Water Soil Cleanup Criteria (IGWSCC) are used as the basis for the delineation. A concentration factor was calculated by dividing the concentration of a specific compound exceeding the IGWSCC by the corresponding criteria. This allows for an equal weighting or normalization of the various compounds found in the various PKC delineation samples. Sediments with contaminant levels above the Hot Spot Criteria are proposed for treatment and containment in conjunction with the PKP closure. Future containment of the PKC sediments ensures that this more lenient criterion is appropriate for the remaining materials that are under the Hot Spot Criteria.

5. Free Product Investigation Work plan

We are preparing and will submit a report for the two areas completed with the CPT, namely the Co-Gen and Yard 4 areas. The RI report will follow section 2.2.2 of the FPIW and the conditions outlined in your June 10, 1999 conditional approval (No. 2 Reporting, bullet 1) of the CPT work. Concurrently, we will complete our negotiations with the CPT contractor and proceed with the planned CPT work if negotiations are successful. If we cannot negotiate a cost effective and timely program, we will complete the areas outlined in the FPIW with a more conventional screening approach such as geoprobe borings and temporary wells. The results of all screening work will be incorporated into the "steps 3 and 4 workplan" conditioned in No. 2 (bullet 2) of your approval letter.

6. Co-Gen Product Recovery

The pilot operation of the recovery system at the Co-Gen facility began on November 21, 2000. The system consists of two recovery wells (RW-1 and RW-2), which are located across the eastern fence line of the Co-Gen property. Total fluids (floating oil and water) pumped from top loading pneumatic recovery pumps are directed to a pretreatment oil/water separator system. Oil is collected and recovery rates and volumes are measured and recorded by BI personnel.

The system recovered 16.8 gallons on free product during the initial startup in December. The pumping levels will be modified and monitored to determine the optimum pumping levels for the system during the fist quarter 2001. Product recovery rates will continue to be monitored and reported in these quarterly reports consistent with reporting for the west side waterfront.

We hope you find this report informative and reflective of consistent progress in our remediation work. Please contact us for such additional information that you feel may be helpful at this time.

Very truly yours,

Robert Weaver, PhD/PE

cc: Mr. E. J. Walker

Mr. R. Fisette (no attachments)

Mr. George M. Bress, PE

Mr. A. Cozzi, CPG (Bluestone Environmental)

TABLES

Table 1 - Water Level/Apparent Product Thickness Measurements-Low Tide Table 2 - Water Level/Apparent Product Thickness Measurements-High Tide

FIGURES

Figure 1 - Product Recovery Summary Graph

Figure 2 - Groundwater Elevation Contour Map - Westside Waterfront - High Tide

Figure 3 - Apparent Product Thickness Contour Map - Westside Waterfront - High Tide

Figure 4 - Groundwater Elevation Contour Map - Westside Waterfront - Low Tide

Figure 5 - Apparent Product Thickness Contour Map - Westside Waterfront - Low Tide

ATTACHMENTS

Hot Spot Map Disposal Documentation Clean Fill Certificate

TABLE 1: FACTOR TOTAL FOR SLUDGE SAMPLES COLLECTED FROM THE PLATTY KILL CANAL BAYONNE INDUSTRIES, INC., BAYONNE, NEW JERSEY

Sample (D Depth (ft.) Sampling Date	PKCSED17A 0 - 5 06/06/95	PKCSED17B 5 - 10 06/05/96	PKCSED17C 10 - 15 06/06/96	PKCSED19A 0 - 5 06/06/96	PKCSED19B 5 - 10 06/06/96	PKCSED190 10-15 06/08/96	PKCSED21A 0 - 5 06/06/96	PKGSED21B 5 - 10 06/06/96	PKCSED21C 10 - 18 06/06/98	NJDEP IGWSCC
VOLATILES (UG/KG) Chlorobenzene Total Xylenes	Concent. Fact. 6,000 6 4,300	Concent. Fact. ND	Concent. Fact. ND 120,000 1.8	Concent, Fact ND ND		Goncent, Fact ND 220,000 3.3	the desired and the second second	Concent. Fact. ND 150,000 2.2	Concent. Fact. ND 150,000 2.2	1,000 67,000
SEMI-VOLATILES (UG/KG) Diethylphthalate Naphthalene FACTOR TOTAL	9,000 5,400	790,000 15.6 190,000 1.9 20.5	4,200 54,000	ND ND	ND 10,000	9,900 280,000 2.6 5.9	ND 69,000	ND 90,000	ND 61,000	50,000 100,000
Sample ID Depth (ft.) Sampling Date	PKCSED23A 0 - 5 06/06/98	PKC\$ED23B 5 - 10 06/06/96	PKCSED23C 10 - 15 06/06/98	PKCSED25A 0 - 5 06/06/96	PKCSED258 5 - 10 08/06/96	PKC\$ED25C 10 • 15	PKCSED27A 0 - 5 06/07/96	PKCSED278 5 - 10 06/07/96	PKC\$ED27C 10 - 15 06/07/96	NJOEF
VOLATILES (UG/KG) Chlorobenzene Total Xylenes	Concent. Fact. 7,700 7.7 20,000	Concent. Fact. ND 500,000 7.5	Concent. Fact. ND 230,000 3.4	Concent. Fact. 4.2 ND	Concent. Fact. ND ND	Concent. Fact. NA NA	Concent. Fact. 8.300 8.3 25,000	Concent. Fact. ND 490,000 7.3	Concent. Fact. ND 330,000 4.9	1,000 \$7,000
SEMI-VOLATILES (UG/KG) Naphthalene Acenaphthene Fluorene FACTOR TOTAL	11,000 6,800 9,900	70,000 13,000 38,000	70,000 10,000 46,000	ND 26,000 NO	ND 1.1	NA NA NA	28,000 14,000 25,000	220,000 2.2 36,000 1.1 110,000 1.1	160,000 1.6 ND 130,000 1.3	100,000 100,000 100,000
Sample ID Depth (ft.) Sampling Date	PKCSED01A 0 - 3 10/21/94	PKCSED018 3 - 6 10/21/94	PKCSED01C	PKCSE006A 0 - 4.5 10/20/94	PKCSED068 4.5 - 9 10/20/84	PKCSED06C	PKCSED08A 0 - 3.25 10/20/94	PKCSED08B 3.25 - 6.5 10/20/94	PKCSED08C	NJOEP IGW9CC
VOLATILES (UG/KG) Chlorobenzene Benzene Total Xylenes	Goncent. Fact. 13,000 13 3,300 3.3 6,600	Concent. Fact. 65,000 65 28,000 28 81,000 1.2	Concent. Fact. NA NA NA	Concent. Fact. ND 14 17	Concent. Fact. ND 2,700 2.7 98,000 1.5	Concent. Fact. NA NA NA	Concent. Fact. ND ND 33	Concent, Fact. 140 17 27	Concent. Fact. NA NA NA	1,000 1,000 87,000
SEMI-VOLATILES (UG/KG) Naphthalene FACTOR TOTAL	210,000 2.1 18,4	100.000 1 95.2	NA	770	66,000	NA	120	2,400	NA	100,000

NOTES

ND : Compound was not detected

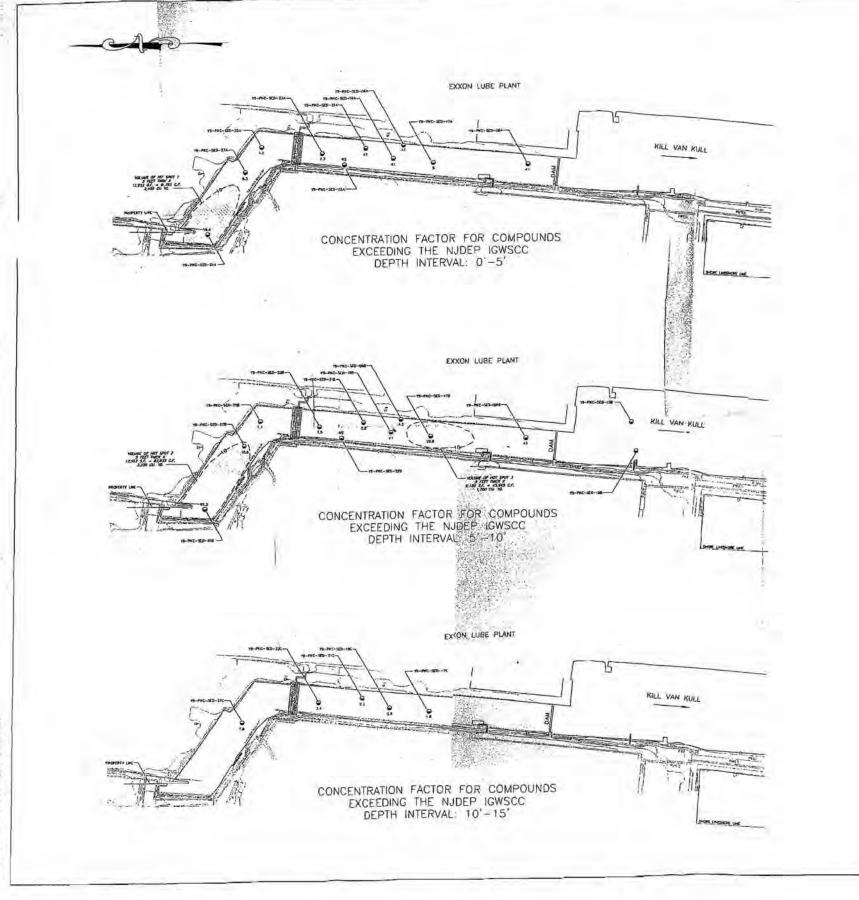
NP : No Proposed Cleanup level available

NA : Not Analyzed

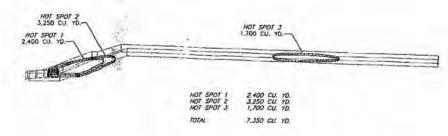
Parameters are above the NJDEP Impact to Groundwater Soil Cleanup Criteria

IGWSCC: Impact to Ground Water Soil Cleanup Criteria.

Concentration factor was calculated by dividing the concentration of a specific compound exceeding the NJDEP IGWSCC by the corresponding criteria. All factors exceeding the NJDEP IGWSCC were added to obtain the FACTOR TOTAL.



CROSS SECTION OF CANAL SHOWING HOT SPOTS



NOTE

 CONCENTRATION FACTOR WAS CALCULATED BY DIMDING THE CONCENTRATION OF A SPECIFIC COMPOUND BY THE CORRESPONDING NUDEP IMPACT TO GROUNDWATER SOIL CLEANUP CRITERIA (IGWSCC). ALL FACTORS EXCEEDING THE NUDEP IGWSCC WERE ADDED AND THE FINAL NUMBER WAS USED TO PREPARE THE CONCENTRATION FACTOR CONTOUR MAP.

HOT SPOT CALCULATION EXAMPLE: NAPHTHALENE IN PKC-SED-27B CONCENTRATION DIMDED BY IGWSCC = FACTOR

220,000 ug/kg DMDED BY 100,000 ug/kg = 2.2

2) VALUES REPORTED FOR SAMPLING LOCATIONS Y8-PKC-SED-01, Y9-PKC-SED-06, AND Y8-PKC-SED-08 ARE FROM THE OCTOBER 1994 SAMPLING EVENT, REPORTED IN THE ENSR PKP INTERIM REMEDIAL ACTION SEPORT DATED NOVEMBER 1994.

3) VALUES REPORTED FOR SAMPLING LOCATIONS Y9-PKC-SED-17, Y9-PKC-SED-19, Y9-PKC-SED-21, Y9-PKC-SED-23, Y9-PKC-SED-25, AND Y9-PKC-SED-27 ARE FROM THE JUNE 1998 SAMPLING EVENT.

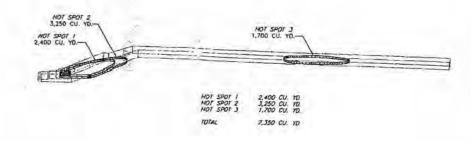
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4) Y9-PKC-SED-22 NOT SAMPLED DUE TO VIBROCORE REFUSAL AT 1 FOOT BELOW SUBSTRATE SURFACE.



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CROSS SECTION OF CANAL SHOWING HOT SPOTS



NOTES

 CONCENTRATION FACTOR WAS CALCULATED BY DIMIDING THE CONCENTRATION OF A SPECIFIC COMPOUND BY THE CORRESPONDING NUDEP IMPACT TO GROUNDWATER SOIL CLEANUP CRITERIA (KOYSCC). ALL FACTORS EXCEEDING THE NUDEP IGWISCC WERE ADDED AND THE FINAL NUMBER WAS USED TO PREPARE THE CONCENTRATION FACTOR CONTOUR MAP.

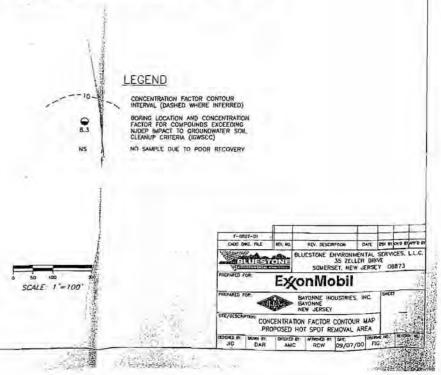
HOT SPOT CALCULATION EXAMPLE: NAPHTHALENE IN PKC-SED-278 CONCENTRATION DIVIDED BY SWISCE - FACTOR

220,000 ug/kg DIVIDED BY 100,000 ug/kg = 2.2

 VALUES REPORTED FOR SAMPLING LOCATIONS Y8-PKC-SED-DI, Y9-PKC-SED-DB, AND Y9-PKC-SED-DB ARE FROM THE OCTOBER 1994 SAMPLING EVENT, REPORTED IN THE ENSR PKP NITERIN REMEDIAL ACTION (2FORT DATE) NOTED NOTED 1994.

3) VALUES REPORTED FOR SAMPLING LOCATIONS Y9-PKC-SED-17, Y9-PKC-SED-19, Y9-PKC-SED-21, Y9-PKC-SED-23, Y9-PKC-SED-25, AND Y9-PKC-SED-27 ARE FROM THE JUNE 1996 SAMPLING EVENT.

4) Y9-PKC-SED-22 NOT SAMPLED DUE TO VIBROCORE REFUSAL AT 1 FOOT BELOW SUBSTRATE SURFACE.



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Bayonne Industries, Inc.

Bayonne, New Jersey



Platty Kill Canal Interim Remedial Action Report

Volume I

ENSR Consulting and Engineering

November 1995

Document Number 3782-009-122



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1.0 INTRODUCTION

This Interim Remedial Action (IRA) Report was prepared by ENSR Consulting and Engineering (ENSR) on behalf of Bayonne Industries, Inc., to document investigation and interim remedial actions that were conducted to control petroleum seepage from the Bayonne Industries site, into the Platty Kill Canal and Kill Van Kull waterways at the southeast corner of the site. This IRA was implemented in accordance with the New Jersey Department of Environmental Protection (NJDEP) approved, Platty Kill Canal Interim Remedial Action Work Plan, dated April 1994. The impetus for this work was a directive issued in July 1993 by the United States Coast Guard (USCG) to Bayonne Industries to initiate petroleum seepage control measures.

This IRA Report includes a discussion on: (1) the reconstruction of the bulkhead along the Platty Kill Canal outside of the dam that separates the Platty Kill Canal from the Kill Van Kull, (2) an investigation to characterize the sediment of the Platty Kill Canal, (3) the installation of a subsurface retainage wall (curtain) to abate the migration of free-phase product into the Kill Van Kull, and implementation of an interim free-phase product recovery program in the area adjacent to the Platty Kill Canal, and (5) the installation of an air curtain barrier outboard of the sheetpile dam to control petroleum sheens and trash from floating out into the Kill Van Kull

2.0 SITE LOCATION AND BACKGROUND

The Bayonne Industries, Inc. site is a 200-acre, bulk liquid storage facility located on East 22nd Street in Bayonne, Hudson County, New Jersey. The site has a history as a refinery and bulk storage facility going back to the early part of the century. Currently, the facility maintains several hundred tanks containing various grades of petroleum and related products. Figure 2-1 presents a Site Location Map and Figure A-1 in Appendix A presents a Site Map. The Kill Van Kull borders the site on the south, while the Platty Kill Canal and Platty Kill Pond partially border the site on the east.

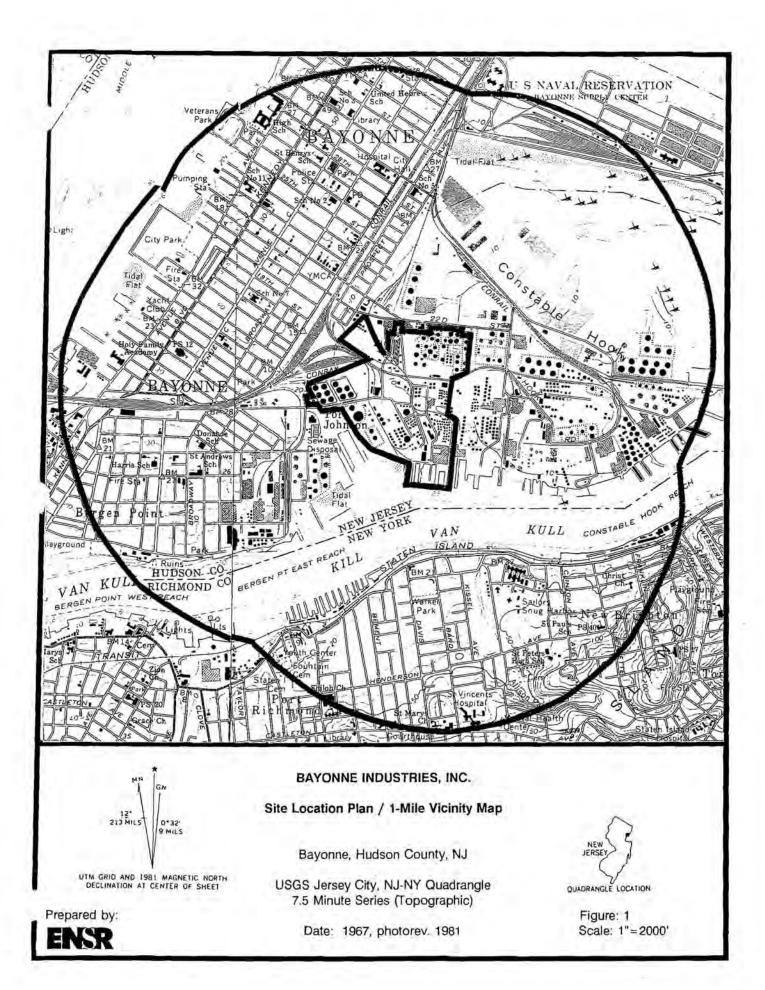
The Platty Kill Pond, which at one time was connected to the dredged Platty Kill Canal, is a former on-site surface impoundment that received the facility's stormwater until May 1978, at which time all site water was directed through an on-site wastewater treatment plant prior to its permitted discharge to open water. The Platty Kill Pond is now separated from the Platty Kill Canal by an earthen dam that has an impermeable barrier installed in its core. The Platty Kill Pond is currently undergoing a bioremediation treatment process that was initiated in 1990 to reduce the petroleum content of residual sludge.

The length of the Platty Kill Canal, from the pond to its confluence with the Kill Van Kull, is approximately 1000 feet. It is now separated from the Kill Van Kull by a sheetpile dam that was installed in 1991 under permit from the U.S. Army Corps of Engineers. The canal has received discharges from the NJDEP-permitted water treatment facility on the Bayonne Industries Site and various outfall pipes which extend from the neighboring Exxon property.

Free-phase product accumulations have been observed in varying amounts in three of the groundwater monitoring wells (MW-5, MW-15 and MW-20) located near the Platty Kill Canal. Free-phase product accumulations in the vicinity of the canal have also been reported on the Exxon Property, which borders the site to the east.

2.1 Site Geology and Hydrogeology

Based on a review of historical soil boring and monitoring well construction logs, the site is known to be underlain by fill material composed of cinders, ash, wood and concrete which ranging in thickness from 3 to 17 feet. Silty clay (commonly referred to as the meadow mat) underlies the fill material and ranges in thickness from 6 to 10 feet. Beneath the silty clay, sand and gravel is reported to occur to the bedrock (approximately 70 feet below grade).





All existing monitoring wells at the site are screened above the meadow mat. The depth to groundwater across the site ranges from 1 to 18 feet below grade with an average hydraulic gradient of 0.0029 (based on January 1995 data), generally toward the south-southwest, except in the immediate vicinity of the canal.

3.0 SUMMARY OF FIELD ACTIVITIES

This section summarizes the field activities and presents the procedures and methodologies used during the implementation of the IRA field program. All activities were conducted in accordance with the NJDEP approved Platty Kill Canal IRA Work Plan, dated April 1994. The results for each of these activities are presented in Section 4.0.

3.1 Bulkhead Reconstruction and Curtain Installation

3.1.1 Platty Kill Canal Bulkhead Reconstruction

From July to November, 1994, Eastchester Towing, Inc., New York, reconstructed the Platty Kill Canal bulkhead south of the sheet pile dam separating the canal from the Kill Van Kull. The bulkhead is located in the southwestern corner of the property. Figure B-1 in Appendix B presents the location of the reconstructed bulkhead. The objective of the reconstruction was to replace the failing bulkhead while maintaining structural stability to the roadway adjacent to the Platty Kill Canal, and to provide a barrier to abate potential seepage of free-phase product from along the shoreline into the mouth of the Platty Kill Canal and Kill Van Kull. To further reduce the potential for the migration of free-phase product to the Platty Kill Canal and the Kill Van Kull, and to facilitate free-phase product recovery, a subsurface free-phase product curtain (subsurface retainage wall) was installed perpendicular to the bulkhead. During the excavation along the canal for the bulkhead reconstruction, very little visible hydrocarbon product accumulation were observed.

The new bulkhead consists of a series of 35-foot long interlocking metal sheetpiles that begin at the existing sheetpile dam and extend approximately 237 feet southward along the canal bank toward the Kill Van Kull. Figure B-2, in Appendix B, provides Bulkhead Reconstruction Detail. The sheetpiles were installed at a distance of approximately 2.5 feet outward from the existing bulkhead. The new sheetpile bulkhead is held in place in a configuration using existing tie-rods that have been extended to connect into the new sheetpile wall. The space between the existing bulkhead and the new sheetpile bulkhead was filled with a certified clean, clay-based fill to serve as structural support for the new bulkhead and as a low permeability barrier between the Platty Kill Canal and potential landside free-phase product plume. A copy of the clean fill certificate is provided in Appendix C.

3.1.2 Product Curtain Installation

In October, 1994, Eastchester installed the subsurface retainage wall (product curtain). The location of the product curtain is presented on Figure B-1, in Appendix B. The free-phase product curtain is connected to the south end of the reconstructed bulkhead and consists of a series of 4-foot wide by 8-foot long interlocking metal sheetpiles installed perpendicular to the reconstructed bulkhead. The bottom of each sheetpile was driven to a depth of approximately 10 feet below ground surface, leaving an approximate four to five foot gap between the bottom of the sheetpile and the meadow mat. This design is similar to an oil-water separator baffle which permits free-phase product to become trapped along the curtain for recovery purposes, and allows groundwater to continue to flow towards, and tidal backflow from, the Kill Van Kull. Construction details of the product curtain are provided on Figure B-2, in Appendix B.

3.2 Interim Free-Phase Product Recovery

Interim free-phase product recovery in the general vicinity of the Platty Kill Canal and eastside waterfront was implemented in four steps. Step 1 included free-phase product recovery from three existing ground-water monitoring wells adjacent to the Platty Kill Canal and on the downgradient edge of the free-phase product plume in Yard 2. Step 2 included a limited soil boring and groundwater monitoring well installation program to further define geology in the area and aid in the final design of the free-phase product recovery system. Step 3 included free-phase product sampling and analysis, and bail down tests, to identify the free-phase product type present on the water table, determine potential product recovery rates and estimate the actual thickness of the free-phase product plume. Step 4 included passive free-phase product recovery from recovery wells installed on the upgradient side of the product curtain.

3.2.1 Free-Phase Product Recovery From Existing Monitoring Wells

On March 21, 1994, Petrotrap® passive skimmers were installed in to three existing monitoring wells (MW-5, MW-15, and MW-20) located in the vicinity of the Platty Kill Canal. The location of these wells is presented on Figure B-1, in Appendix B. Historically; monitoring wells MW-5, MW-15 and MW-20 have displayed product accumulations ranging from 0.05 feet (7/13/93; MW-15) to 2.22 feet (7/13/93; MW-5). Passive skimmers have been operated in monitoring wells MW-5 and MW-20 since March 21, 1994 to present. Between March 21 and July 26, 1994, product accumulations in MW-15 were reduced to non-detectable levels. At the end of July 1994 the passive skimmer in MW-15 was transferred to monitoring well Y2-MW-39. Monitoring well Y2-MW-39 was installed in July 1994 and was expected to



accumulate product following installation. The passive skimmer remained in Y2-MW-39 from the end of July 1994 to November 1994; however, free-phase product has not observed in Y2-MW-39 to date. In November 1994, the passive skimmer was transferred from Y2-MW-39 to MW-4. Since May 1993, MW-4, which is located near the Platty Kill Pond, has displayed product accumulations ranging in thickness from 0.27 ft. (6/10/93) to 1.75 ft. (10/15/93).

The Petrotrap® is a skimming unit which consists of an active buoy assembly, a collection canister and an exterior housing. The buoy assembly contains a hydrophobic membrane which allows only product to enter the collection canister and can also reduce product accumulations. These skimmers were used to initiate free-phase product recovery in the southeast corner of the site. All product accumulations removed by the passive skimmers were collected from the wells on a bi-weekly basis (twice/month). The free-phase product was manually removed from the passive skimmers by a technician and transferred to 55-gallon drums to await disposal. The fluids contained in the drums are presently stored on site in an enclosed secondary containment system at MW-5 and MW-20 locations.

During each site visit, an ENSR technician recorded the quantity of product removed from each well, measured and recorded the groundwater and free-phase product elevations in each well, and measured and recorded the amount (i.e., inches) of accumulated product in the product storage drums.

3.2.2 Exploratory Soil Boring and Groundwater Monitoring Well Installation

Three shallow exploratory soil borings were completed in July 1994 to further define the geology in the area and to aid in the development of the final design of the free-phase product recovery system. These borings were installed prior to installation of the product curtain. The borings were advanced to the meadow mat in the area of the proposed product curtain. The NJDEP approved IRA Work Plan had proposed the installation of four exploratory soil borings; however several attempts to install the fourth soil boring met with refusal at less than 1 foot; therefore, installation of this soil boring was abandoned. In addition to the soil borings, three shallow groundwater monitoring wells, Y2-MW-39, Y2-MW-40, and Y2-MW-41, were installed to delineate and monitor free-phase product accumulations in the vicinity of the Platty Kill canal. Monitoring wells Y2-MW-39 and Y2-MW-41 were installed in July 1994. Due to bulkhead reconstruction activities in July 1994 the installation of monitoring well Y2-MW-40 was postponed until December 1994, at the same time as the installation of recovery wells. Liquid measurements collected from these wells will be discussed in Section 4.4. The location of these soil borings and monitoring wells are provided on Figure B-1 in Appendix B.

3.2.2.1 Exploratory Shallow Soil Boring Installation

In July 1994, three exploratory soil borings Y2-PKB-SS-01, Y2-PKB-SS-02, and Y2-PKB-SS-04 were drilled using the hollow-stem auger method in the area of the proposed product curtain. The fourth soil boring was abandoned due to refusal at less than one foot in depth. The drilling was performed by a New Jersey licensed driller employed by SJB Drilling Services, New Holland, Pennsylvania and supervised by an ENSR hydrogeologist. Continuous split-spoon sampling was conducted in each boring, in accordance with the New Jersey Department of Environmental Protection (NJDEP) Field Sampling Procedures Manual (FSPM) and the standard penetration test procedure (ASTM D1586).

Two soil borings Y2-PKB-SS-01 and Y2-PKB-SS-02, were advanced to the meadow mat, between 16 and 18 feet below grade. The third soil boring, Y2-PKB-SS-04 met with refusal at 6 feet below grade. The recovered soils in each split-spoon were initially field-screened with a photoionization detector (PID), characterized, and recorded on a soil boring log. In accordance with the NJDEP, Technical Requirements for Site Remediation (NJAC 7:26E-3.6(a)2ii), the Burmister soil classification system was used to describe the soils encountered during the investigation. Soil boring logs are provided in Appendix D.

Two samples were collected from these soil borings for geotechnical analysis: One was collected from the meadow mat (silty clay) at boring Y2-PKC-SS-01 and the second was collected from the overlying stratigraphic unit at boring Y2-PKC-SS-04. These samples were collected to determine the hydraulic conductivity and the grain size distribution for each stratigraphic unit. The sample of the meadow mat was collected by shelby tube and the sample of the overlying stratigraphic unit was collected by split-spoon. The geotechnical analysis was performed by Paulus, Sokolowski, and Sartor of Warren, New Jersey. Results of the geotechnical analysis are provided in Section 4.0.

At the completion of the soil boring installation, each borehole was tremi-grouted with a bentonite-concrete mixture, from the completion depth to ground surface. All contaminated soils were containerized on site.

3.2.2.2 Shallow Groundwater Monitoring Well Installation

In July and December 1994, three shallow monitoring wells, Y2-MW-39, Y2-MW-40, and Y2-MW-41 were installed to delineate and monitor the free-phase product accumulations in the area of the Platty Kill Canal. These wells were installed by a New Jersey certified driller from SJB Services, New Holland, Pennsylvania.



Soil borings completed for the installation of monitoring wells were advanced to total depths between 13 and 15 feet below grade using the hollow-stem auger method of drilling. The borings were completed as monitoring wells using 4-inch diameter flush-threaded schedule 40 PVC, 20-slot screen and solid casing with Morie grade No.2 sand pack. Approximately one foot of fine to very fine sand was overlain at the top of the sand pack. Overlying the sandpack, a grout mixture of Portland cement and high grade bentonite was tremi-grouted into the annular space to ensure a proper seal. Each well screen was installed to intersect the water table, taking into consideration tidal fluctuations. Monitoring Well Construction diagrams are provided in Appendix D.

Each groundwater monitoring well was developed for approximately one hour until the discharge water became relatively clear (removal of fine-grained materials). Development rates were high enough to remove the fines from the sand pack but low enough to avoid dewatering the well. The development water was containerized on site.

All drilling equipment used for the well installation was decontaminated with a high pressure steam clean wash followed by a potable supply water rinse. All fluids generated from decontamination were containerized and stored on site.

The ground surface and casing elevations of the monitor wells were surveyed by a certified Professional Land Surveyor, J. Peter Borbas, PLS, Boonton, New Jersey.

3.3 Free-Phase Product Recovery at the Curtain

As previously stated, to minimize the potential for free-phase product to enter the Platty Kill Canal and Kill Van Kull through the bulkhead, a product curtain was installed in the southeast portion of the site. Additionally, in December 1994, three shallow recovery wells, Y2-PKB-RW-1, Y2-PKB-RW-2, and Y2-PKB-RW-3 were installed to initiate free-phase product recovery on the upgradient side of the product curtain. The location of these wells are presented on Figure B-1 in Appendix B.

3.3.1 Recovery Well Installation

The recovery wells were drilled to a total depth of 9.5 feet below grade by a New Jersey certified driller, from SJB Services. The wells were installed with 5 feet of 6-inch I.D., flush-threaded, Type 304, wire-wrapped, stainless steel screen, and 4 feet of 6-inch I.D., solid, carbon steel casing, with the bottom of the well screen being capped by a 2-foot section of 6-inch I.D., solid, carbon steel casing to act as a sump. A sand pack for each recovery well was placed around the well screen, extending to approximately two feet above the top of the

screen. Approximately one foot of fine to very fine sand was placed at the top of the sand pack. A grout mixture of Portland cement and high grade bentonite was tremi-grouted into the annular space above the sand pack to ensure a proper seal. Recovery Well Construction diagrams are provided in Appendix D.

Following installation, each recovery well was developed for approximately one hour until the discharge water became relatively clear (removal of fine-grained materials). As with the monitoring wells, development rates were high enough to remove the fines from the sand pack but low enough to avoid dewatering the well. The development water was containerized and stored on site.

All drilling equipment used for the well installation was decontaminated with a high pressure steam clean wash followed by a potable supply water rinse. All fluids generated from decontamination were containerized and stored on site.

The ground surface and casing elevations of the recovery wells were surveyed by a certified Professional Land Surveyor, J. Peter Borbas, PLS, Boonton, New Jersey.

3.3.2 Free-Phase Product Characterization

3.3.2.1 Free-Phase Product Sampling and Analysis

In order to characterize the free-phase product in the area of the Platty Kill Canal, product samples were collected and analyzed for product type (GC fingerprint) and relative age (forensic). Free-phase product samples were collected from monitoring wells MW-5 and MW-20, and recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2. Samples were collected using disposable, bottom-filling PVC bailers. Prior to sample collection, the depth to product and water were measured in each well utilizing an oil/water interface probe, designed to detect the presence and thickness of light, non-aqueous phase liquids (LNAPL). For each product sample collected a dedicated polyethylene bailer was used to collect the free-phase product and underlying groundwater. The samples were directly transferred from the bailer to the laboratory-supplied sample jars.

Free-phase product samples were shipped to International Lubrication and Fuel Consultants (ILFC), in Rio Rancho, New Mexico, (New Jersey Laboratory Certification No. 71800) for analysis. Samples were analyzed in accordance with ILFC's hydrocarbon finger printing protocols which include modified EPA Methods 8015, 8260 and 8270.

3.3.2.2 Free-Phase Product Bail-Down Test

In order to estimate the volume of recoverable product within the subsurface formation and to determine the potential product recovery rate for the formation, product bail-down tests were performed on recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2, and monitoring well MW-20 in January 1995. Due to the high viscosity of the product in monitoring well MW-5, a fourth test was aborted. Product bail-down tests are performed to distinguish between the measured apparent product thickness in the well and the actual product thickness within the formation.

As originally described by Gruszczenski (1987)¹, the test procedure includes the removal of all free-phase product from the well with subsequent measurements of the water table interface and product accumulations at specific intervals (i.e., every 30 seconds). Following the completion of the test, the data points of depth-to-product and depth-to-water are graphically plotted against time. The point at which the depth-to-water curve changes from a positive slope to a negative slope is referred to as the inflection point. The negative slope (or increase in the product thickness) after the inflection point is the result of product draining from the capillary fringe. The distance between the inflection point and the measured stabilized top-of-product measurements is the sum of the capillary fringe and the actual formation thickness. For graphical determination of the actual product thickness in the formation, the "inflection point time" can be plotted on a graph depicting product thickness over time.

3.3.3 Passive Skimmer Installation - Recovery Wells

On January 4, 1995, two passive skimmers were transferred from existing monitoring wells MW-4 and MW-5 to recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2. In February 1995, a fourth skimmer was acquired and installed into monitoring well MW-5. To date, skimmers are being utilized in Y2-PKB-RW-1, Y2-PKB-RW-2, MW-5 and MW-20.

3.4 Platty Kill Canal Sediment Investigation

The sediment investigation of the Platty Kill Canal was conducted in two steps. The first step included a bathymetric survey to determine the elevation of the top of the sediment profile. The second step included the collection and analysis of sediment samples. The primary objective of the sediment investigation was to provide general delineation of any contaminated

¹ Gruszczenski, T.S. 1987. Determination of a Realistic Estimate of the Actual Formation Product Thickness using Monitor Wells: A Field Bailout Test. *In Proceedings of Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection and Restoration. NWWA, Houston, Texas.*



sediment in the Platty Kill Canal and Kill Van Kull, outward of the sheetpile dam, and to determine whether a contaminant concentration gradient exists with depth. For discussion purposes the Platty Kill Canal can be divided into three distinct sections. The northern most section includes the area from the earthen dam at the Platty Kill Pond to the bridge and baffle that span the canal. The mid-section includes the area from the bridge to the sheetpile dam at the mouth of the Platty Kill Canal. The third section includes the area outside of the sheetpile dam. The Platty Kill Canal is presented on Figure E-1 in Appendix E.

3.4.1 Bathymetric Survey

The bathymetric survey was conducted in November 1993. The survey was conducted by collecting a series of electronic soundings in the Platty Kill Canal and in the Kill Van Kull outward of the sheetpile dam. These soundings were used to establish a contour map of the top of the sediment. The top of sediment profile was used to determine actual sample locations. Figure E-1 in Appendix E provides the Bathymetric Survey Map of the Platty Kill Canal.

3.4.2 Sediment Sampling Program

From October 18 to 21, 1994, sixteen, 10-foot sediment cores were collected from the Platty Kill Canal using a portable vibratory corer mounted on a 22-foot, motorized pontoon work platform. Eight sediment cores were collected from outside of the sheetpile dam that separates the Platty Kill Canal and Kill Van Kull, and eight were collected from inside the sheetpile dam. Of the eight sediment cores that were collected from inside the sheetpile dam, four were from the northern section and four were from the mid-section. The time frame in which the sampling was conducted was selected since limited or no precipitation had occurred, so that the sediments sampled were not disturbed by natural surface runoff or dispersed by turbulent flow. Thirty-two samples (two per core) plus quality assurance/quality control (QA/QC) samples were submitted for laboratory analysis. Sediment Core locations are presented on Figure E-1 in Appendix E.

Prior to initiating the sampling activity, all work areas (where practical) were covered with plastic sheeting and all sampling equipment (core tubes, etc.) were steam cleaned. All field personnel handling the sediment cores or the sediment corer were in modified level C protection. A core sampling station was established in a central location onshore. A crane was used to place the floating work platform in the desired area (within the canal, within the Kill Van Kull). Once the work platform was placed in the water, it was mobilized to the selected sampling location and the position was stabilized for coring.



A vibratory corer (OSI Model 1000) fitted with a dedicated aluminum core tube was lowered into the water until the core sampling tube was positioned at the water-sediment interface (canal bed). Once at the interface, the vibratory coring process commenced until a full 10-foot core length of penetration was achieved or refusal was met. Upon completion of the coring, the vibratory corer was removed from the water and the tube ends were capped. The work platform was then mobilized to the shore and the core tube was transferred to field personnel at the onshore sampling station. The core tube was cut lengthwise into two halves using a hand-held electric clipper. The shallow blade of the clipper permitted that only the aluminum core tube was cut, yielding very little disturbance to the sediment core. After the core tube was opened, the sediment core was screened with a photoionization detector, sediment was sampled for analysis, the sediment core was logged and finally the core was photo-documented.

Samples were collected from each sediment core at two depth intervals; the 0- to 5-foot interval; and in 5- to 10-foot interval. The volatile organic fraction from each specified depth interval was collected first, using a stainless steel trowel. The remainder of each sample was transferred to a decontaminated, stainless steel bowl and homogenized, and then transferred to the appropriate sample jar for the remaining analytical fractions. To prevent cross-contamination, the laboratory cleaned sample containers remained sealed until the sample was removed from the core tube and homogenized. Disposable latex gloves were changed by the sample technician for each sample collected. After a sufficient amount of sample was placed in the container, the container was sealed and placed in a cooler at 4°C until final receipt at the laboratory. This procedure was repeated for each sediment core location. The coolers containing the samples and the chain-of-custody documentation were shipped daily from the site to IEA Laboratories in Whippany, New Jersey, laboratory certification no. 14530. Table 3-1 provides a summary of the samples collected and the analytical procedures used.

Environmental duplicate samples were collected at a frequency of one per twenty samples. Field blanks were collected at a frequency of one per day. Each QA/QC sample was analyzed for the same parameters as the sediment samples.

Following sampling of each core, all sampling equipment was decontaminated for reuse in accordance with the procedures specified in the NJDEP FSPM and Bayonne Industries RI work plan. The excess sediment not used during sampling was temporarily placed on plastic sheeting and later disposed of directly back into the Platty Kill Canal.

TABLE 3-1 SUMMARY OF SEDIMENT SAMPLE ANALYSES PLATTY KILL CANAL BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

SAMPLE ID NUMBER	ANALYTICAL PARAMETERS
Y9-PKC-SED-01A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-01B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-02A	TPH, pH, TOC, GSZ
Y9-PKC-SED-02B	TPH, pH, TOC, GSZ
Y9-PKC-SED-03A	TPH, pH, TOC, GSZ
Y9-PKC-SED-03B	TPH, pH, TOC, GSZ
Y9-PKC-SED-04A	TPH, pH, TOC, GSZ
Y9-PKC-SED-04B	TPH, pH, TOC, GSZ
Y9-PKC-SED-05A	TPH, pH, TOC, GSZ
Y9-PKC-SED-05B	TPH, pH, TOC, GSZ
Y9-PKC-SED-06A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-06B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-06C (DUP)	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-07A	TPH, pH, TOC, GSZ
Y9-PKC-SED-07B	TPH, pH, TOC, GSZ
Y9-PKC-SED-08A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-08B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-09A	TPH, pH, TOC, GSZ
Y9-PKC-SED-09B	TPH, pH, TOC, GSZ
Y9-PKC-SED-10A	TPH, pH, TOC, GSZ
Y9-PKC-SED-10B	TPH, pH, TOC, GSZ
Y9-PKC-SED-11A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-11B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-12A	TPH, pH, TOC, GSZ
Y9-PKC-SED-12B	TPH, pH, TOC, GSZ

TABLE 3-1 CONT'D

SAMPLE ID NUMBER	ANALYTICAL PARAMETERS
Y9-PKC-SED-13A	TPH, pH, TOC, GSZ
Y9-PKC-SED-13B	TPH, pH, TOC, GSZ
Y9-PKC-SED-14A	TPH, pH, TOC, GSZ
Y9-PKC-SED-14B	TPH, pH, TOC, GSZ
Y9-PKC-SED-15A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-15B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-16A	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-16B	TPH, TCL*, TAL, pH, TOC, GSZ
Y9-PKC-SED-16C (DUP)	TPH, TCL*, TAL, pH, TOC, GSZ

TPH - Total Petroleum Hydrcarbons - NJDEPE Method OQA-QAM-005-12/89

TCL - Target Compound List Organics - EPA Method 3550/8240/8270

TAL - Target Analyte List Inorganics - EPA Method3050/6010/7000

TOC - Total Organic Carbon - EPA Method 9060

GSZ - Grain Size Distribution

* - Semi volatile cleanup, if required - EPA Method 3611 or 3640

Reference No.: PKCIRA.TBL



3.5 Pneumatic Barrier Installation

Between March 27, and April 5, 1995, Air Guard, Inc., of Trumbull, Connecticut installed a pneumatic barrier (The Air Guard Containment System[™]) at the mouth of the Platty Kill Canal. The pneumatic barrier is attached to the bulkhead at a location approximately mid-point between monitoring well Y2-MW-40 and the product curtain, and extends to, and is attached at, the mid-point of the sheetpile dam at the mouth of the Platty Kill Canal. The purpose of the pneumatic barrier is to contain floating trash and oil seepage from the Platty Kill Canal and from under the bulkhead, from floating out into the Kill Van Kull waterway. A secondary objective of the system is the enhancement of the water quality at the mouth of the Platty Kill Creek Canal, by the addition of substantial pounds of dissolved oxygen into an oxygen deficient environment.

The Air Guard Containment System™ works by creating a surface and underlying current of a magnitude sufficient to prevent floating liquids and solids from overrunning it or being entrained below it. The current is induced by means of air (which is supplied by an onshore compressor) flowing through a perforated pipe that is laid on the bed of the harbor or canal. The perforations along the length of the manifold pipe allows the air to escape through the water column, and creates a vertical wall of bubbles. The drag of the bubbles and lowered pressure within the bubble stream creates an upward current which, when approaching the surface, turns into a horizontal flow. The generated surface current opposes (acts as a barrier to) existing water movement thereby preventing the passage oil or any other surface debris.

Permits for the installation of the pneumatic barrier were applied for and received from the New York District of the U.S. Army Corps of Engineers (NYDCOE Permit No. 94-06220, dated December 29, 1994) and the NJDEP (Waterfront Development permit No. 0901-94-00041, dated October 4, 1994).

3.5.1 Effect on Water Quality

An environmental assessment was conducted by Environmental Services of Easton, Connecticut, to determine the localized effect the pneumatic barrier was having on water quality and endemic fish populations in the vicinity of the Platty Kill Canal mouth. The sampling design was developed to address chemical, physical, and biological parameters in the near field of the pneumatic barrier and neighboring control sites. One test site and three control sites were selected. The control sites were selected based on similarity to the test site relative to:

presence of structure, open water vs. protected waters;

- water velocity and currents;
- salinity regime;
- · water depth;
- sediment characteristics:
- temperature and dissolved oxygen; and
- food resources.

The test site encompassed the inter-pier basin between IMTT Pier #4 and Exxon Pier #1, with sampling conducted as close to the pneumatic barrier as possible. The control sites included the inter-pier basin located between IMTT Piers #3 and #4, approximately 500 to 700 feet from the pneumatic barrier; the inter-pier basin between IMTT Pier #2 and the Coal Pier, approximately 1,000 to 1,200 feet from the pneumatic barrier; and a site directly across the Kill Van Kull from the Bayonne Industries site, approximately 1,500 to 2,000 feet from the pneumatic barrier.

Fish and pelagic macroinvertebrates were collected at each of the sites using a variety of sample collection equipment including gill nets, bottom/surface/midwater trawls, and trap nets. Water quality data including turbidity, temperature, dissolved oxygen, and percent saturation were also collected in conjunction with each biological sample collected.



4.0 FINDINGS/INTERIM REMEDIAL ACTION

This section summarizes the results and presents a discussion of the findings for the IRA activities.

4.1 Platty Kill Canal Bulkhead Reconstruction

The reconstruction of the bulkhead required 5 months to complete. Since the reconstruction of the bulkhead on the Platty Kill Canal, free-phase product seepage from the canal has been attenuated.

4.2 Platty Kill Canal Product Curtain

Following the installation of the product curtain three recovery wells were installed on the hydraulically upgradient side of the curtain. Within weeks of their installation, two of the three recovery wells began to accumulate free-phase product. Free-phase product accumulations which increase in thickness over time at these well locations will be indicative of the free-phase product plume attenuation.

4.3 Geological Characterization in the Vicinity of the Platty Kill Canal

During installation of the exploratory soil borings, monitoring wells and recovery wells, splitspoon samples and samples for geotechnical analyses were collected to characterize and understand the geology in the vicinity of the Platty Kill Canal. The results of these samples are provided below.

4.3.1 Shallow Exploratory Soil Borings

On July 20, 1994, three shallow exploratory soil borings (Y2-PKB-SS-01, Y2-PKB-SS-02, Y2-PKB-SS-04) were completed along the Platty Kill Canal. The soil boring locations are presented on Figure B-1 in Appendix B. A fourth soil boring (Y2-PKB-SS-03) was attempted; however, refusal was met at the ground surface. Continuous split-spoon sampling was conducted at each soil boring. The soil boring logs are provided in Appendix D. In reference to Appendix D, the soils observed while drilling primarily consisted of red-brown to black fill material (concrete, wood, brick, coal, rock fragments, medium to fine sand and silt) from the ground surface to between 4 and 8 feet below grade level. From 8 to 12 feet below grade, black clayey silt to clayey sand with trace amounts of fill material (wood, brick, concrete) was observed. Black to brown clayey silt with varying amounts of medium to fine sand, gravel



and shell fragments were observed between 12 and 16 feet. Below 16 feet, dark gray clay with some silt and trace amounts of shell fragments were observed. Volatile organic vapors were primarily detected at the water table interface (~5 feet below grade). The highest volatile organic vapor levels (100 parts per million) were observed in soil boring Y2-PKB-SS-O1 between 6 and 10 feet below grade.

Two samples for geotechnical analyses were collected, one from soil boring Y2-PKB-SS-O1 and one from soil boring Y2-PKB-SS-O4, at depths of 18 to 20 feet and 4 to 6 feet, respectively. These samples were submitted for geotechnical analysis at Paulus, Sokolowski and Sartor of Warren, New Jersey. Appendix F contains the data for these analyses. The geotechnical sample collected from soil boring Y2-PKB-SS-O1 was collected using a shelby tube, and is assumed to be representative of the meadow mat. The geotechnical analysis of soil sample Y2-PKB-SS-O1 indicated that it was a dark gray, organic silty clay with occasional shell fragments and had a hydraulic conductivity of 1.14×10^{-7} cm/sec (3.73×10^{-9} ft/sec). This hydraulic conductivity value is typical of marine clays.

The geotechnical sample collected from soil boring Y2-PKB-SS-04 was collected using a split-spoon sampler, and is assumed to be representative of the fill material. The grain size distribution analysis of soil sample Y2-PKB-SS-04 indicated that it was a tan-brown to dark gray fine to medium sand with little silt and trace amounts of fine gravel and coarse sand. Though not analyzed, the hydraulic conductivity for silty to fine sand typically ranges from 1 \times 10⁻⁵ to 1 \times 10⁻³ cm/sec.

4.3.2 Shallow Groundwater Monitoring Wells

There were five existing monitoring wells located in the vicinity of the Platty Kill Canal prior to implementation of this IRA. These included MW-4, MW-5, MW-15, MW-19, and MW-20. In July and December 1994, three additional monitoring wells, Y2-MW-39, Y2-MW-40, and Y2-MW-41, were installed to delineate and monitor the free-phase product accumulations in the area of the Platty Kill Canal. The location of the wells in the vicinity of the Platty Kill Canal are presented on Figure B-2 in Appendix B. Well construction diagrams, well permits, well certification Forms A and B, and well records for the newly installed wells are contained in Appendix D.

Four samples for geotechnical analyses were collected from soil borings Y2-MW-39 and Y2-MW-41 at stratigraphic depths which correlate to the fill material (5 to 9 feet) and the meadow mat (13 to 15 feet). These samples were submitted for geotechnical analysis at Paulus, Sokolowski and Sartor of Warren, New Jersey. Appendix F contains the data for these analyses. The shelby tube samples collected from soil borings Y2-SS-MW-39 and Y2-



SS-Y2-MW-41 indicated that they were similar in composition: dark gray, organic silty clay to clayer silt with occasional shell fragments. The hydraulic conductivities for soil collected from Y2-SS-MW-39 and Y2-SS-Y2-MW-41 were determined to be 4.24 x 10⁻⁸ cm/sec and 2.56 x 10⁻⁸ cm/sec, respectively. As with soil sample Y2-PKB-SS-01, these hydraulic conductivity values are typical of marine clays. The grain size distribution analysis of Y2-SS-MW-39 identified it as dark brown to black, coarse to fine sand with some coarse to fine gravel, little silt and trace amounts of cinders and brick fragments. The grain size distribution analysis of Y2-SS-Y2-MW-41 identified it as dark gray to black, coarse to fine sand with some silt and trace amounts of fine gravel, cinders, concrete and brick fragments.

4.3.3 Product Recovery Wells

In December 1994, following installation of the product curtain, three 6-inch diameter product recovery wells (Y2-PKB-RW-1, Y2-PKB-RW-2, and Y2-PKB-RW-3) were installed on the upgradient (north) side of the product curtain to initiate free-phase product recovery. The location of the product curtain and the recovery wells are provided on Figure B-1 in Appendix B. Well construction diagrams, well permits, well certification Forms A and B, and well records are contained in Appendix D.

The soil observed while drilling at Y2-PKB-RW-01 consisted of black clay from the surface to 2 feet of depth. Underlying the black clay unit, black fine to coarse sand and gravel with varying amounts of clay was observed to a depth of 12 feet, the well completion depth. This contrasts with information obtained for recovery wells Y2-PKB-RW-02 and Y2-PKB-RW-03. The soil observed while drilling recovery well Y2-PKB-RW-02 consisted of brown, coarse to fine sand and gravel from the surface to three feet below grade. Below three feet, brown to black clay with minor varying amounts of sand, silt and gravel was observed to 8 feet. Below 8 feet, clayey sand and gravel were observed to 12 feet below grade. The soils observed while drilling recovery well Y2-PKB-RW-03 consisted of brown-black medium sand with little gravel and trace amounts of clay from the surface to two feet below grade. Below two feet, concrete and slag in a brown clay and silt matrix was observed to 4 feet of depth. Below 4 feet, black clay with minor amounts of coarse sand was observed to 12 feet below grade. The stratigraphic variance between these closely spaced borings is indicative of the nature of the fill material in this area. The recovery well soil boring logs are provided in Appendix D.

4.3.4 Stratigraphic Characterization in the Vicinity of the Platty Kill Canal

The soil observed in the vicinity of the Platty Kill Canal consists primarily of thin deposits of fill material and gravelly sand-silt mixtures. Figure G-1 in Appendix G provides a stratigraphic cross-section of the geology in the vicinity of the Platty Kill Canal. Recent and historical soil



boring logs were used to generate the stratigraphic cross sections contained on Figure G-1. Cross Section A-A' and B-B' identifies the stratigraphic units from north to south along the Platty Kill Canal. Cross Sections C-C' identifies these stratigraphic units in a perpendicular orientation.

In reference to cross sections A-A' and B-B', the overlying fill material ranges from 5 to 10 feet in thickness. The primary grain size of stratigraphic units which overlie the meadow mat becomes finer towards the south, near the Kill Van Kull, and immediately along the Platty Kill Canal. In the vicinity of the Platty Kill Canal the meadow mat is essentially a silty clay with an occasional presence of fine sand and shell fragments. Along the Platty Kill Canal the meadow mat occurs at approximately 13 feet below grade and is relatively flat. However, further inland, as evidenced by Cross-Section A-A', the meadow mat displays a slight gradient (0.002) from north to south.

4.4 Delineation of Free-phase Product in the Vicinity of the Platty Kill Canal

To delineate the extent of free-phase product in the vicinity of the Platty Kill Canal, ENSR installed a series of monitoring and recovery wells, collected a series of free-phase product measurements from the wells, collected and analyzed free-phase product samples, and conducted free-phase product bail-down tests on select wells. The results of these delineation activities are presented below.

4.4.1 Free-Phase Product Measurements - Monitoring Wells

As part of a year long, site-wide ground water measurement program beginning in February 1993 and ending in February 1994, liquid measurements were collected from existing monitoring wells MW-4, MW-5, MW-15, MW-19, and MW-20. Additional rounds of site-wide liquid measurements were collected in January and June 1995. Monitoring wells MW-4, MW-5, MW-15, and MW-20 have all had a passive skimmer installed in them at some point between March 1994 and January 1995. Liquid measurements were also collected from these wells each time the respective skimmer was emptied. Monitoring wells MW-4, MW-5 and MW-20 have had measurable amounts of free-phase product. Free-phase product has not been measured in monitoring well MW-19. Historically, less than 0.10 foot of free-phase product has been measured in the well after installation and subsequent removal of the passive skimmer. Liquid measurements collected from newly installed monitoring wells Y2-MW-39, Y2-MW-40, and Y2-MW-41 in July, August, November and December 1994, and January 1995 indicate the absence of free-phase product in these wells. Results of the free-phase product measurements are presented in Tables 4-1 and 4-2. Based on the results of free-phase

TABLE 4-1
FREE PHASE PRODUCT THICKNESS MEASUREMENTS

BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

WELL ID	2/4/93	3/8/93	4/8/93	5/5/93	6/10/93	7/13/93	8/10/93	9/9/93	10/15/93	2/22/94	1/4/95	6/8/95
MW-1	0.89	1.45	1.18	1.42	1.21	2.78	2.44	2.12	2.03	1.96	0.75	2.07
MW-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	sheen
MW-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	sheen
MW-4	0.04	0.31	0.28	0.30	0.27	0.82	1.08	1.47	1.75	1.46		0.79
MW-5	0.87	0.77	1.31	1.00	0.84	2.22	1.62	1.55	0.92	1.09		0.15
MW-6	ND	ND	ND	ND	ND	ND	ND	ND	sheen	ND	ND	ND
MW-7	0.09	0.01	0.19	0.23	0.13	0.07	0.06	0.01	0.02	0.03		0.57
MW-8R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND
MW-9	ND	ND	ND	ND	ND	ND	ND	ND	sheen	ND		0.47
MW-10	0.24	0.09	0.43	0.39	0.69	0.03	0.09	0.10	1.13	ND		0.04
MW-11	0.24	0.19	0.46	0.60	0.38	0.54	0.55	0.63	1.17	1.23		2.02
MW-12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		0.01
MW-13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND
MW-15	0.03	0.08	NA	0.01	0.08	0.05	0.08	0.06	0.14	ND	_	
MW-16	0.67	0.49	0.99	0.93	NA	NA	0.44	0.60	0.25	ND		0.03
MW-17	0.07	0.06	0.02	0.17	0.07	0.11	0.14		0.08		_	0.39
MW-18R	ND	ND	ND	ND	ND	ND			ND	ND	_	
MW-19	ND	ND	ND	ND	ND	ND	ND	ND			_	ND
MW-20	1.47	1.20	1.01	1.47	1.79	1.69	1.63	1.61	0.57	NA	_	
MW-21	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	-	
MW-22	ND	ND	ND	ND	ND	ND	ND	ND		ND	-	
MW-23	0.02	_	NA	0.01	0.03	0.02	0.07	0.05	0.07	0.05		
MW-24	ND		ND	ND	ND	ND	ND	ND		NE	_	
MW-25	ND			ND	ND	ND	ND	ND	ND	sheer	ND.	0.01

TABLE 4-1 FREE PHASE PRODUCT THICKNESS MEASUREMENTS

BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

WELL ID	2/4/93	3/8/93	4/8/93	5/5/93	6/10/93	7/13/93	8/10/93	9/9/93	10/15/93	2/22/94	1/4/95	6/8/95
MW-26R	ND	ND	ND	ND	ND	ND	ND	ND	ND	- ND	ND	0.02
MW-27	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	0.08	0.12
MW-28	0.05	0.01	sheen	sheen	ND	ND	ND	ND	ND	ND	0.05	0.03
MW-29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	sheen
Y4-MW-30***			94	-	142		-			4.		ND
Y4-MW-31***	T					**	4.	,	*			sheen
Y4-MW-32***	m = 25-2								.64	· ·		sheen
Y1-MW-33***			77	-		-	••	-			-	sheen
Y6-MW-34***	12 06			**	*	4			149		-	ND
Y5-MW-35***		-	-			144	-	11.	-	*	A	sheen
Y1-MW-36***	74		**			-				-		0.16
Y3-MW-37***	1 4	-		1 - T- 74	-		7	1	4	44		sheen
Y9-MW-38***	pr == 544			1 1 1			-		4	4		0.38
Y2-MW-39 *	4		III.3		-		144		-		ND	sheen
Y2-MW-40 *		-		**					A		ND	ND
Y2-MW-41 *				-					4	77 4	ND	sheen
Y2-PKB-RW-1 * *	-		- 6		-		-	6.0		Tet	1.45	2.01
Y2-PKB-RW-2 **						-	-	**		765	0.62	2.26
Y2- PKB-RW-3 **		**	-	-	-				1.69	-	1.44	sheen
Notes:	* = indi	cates well	was insta	illed in 7/	94							
	** = inc	dicates we	ll was ins	talled in 1	2/94							
	* * * = in	dicates we	ell was ins	stalled be	ween 4/95	and 5/95						
	= the	well was	not instal	led at tha	t time							
	ND = no	ot detected	(<0.01	ft)		4.7						10 10 10
100	NA = nc	access										
	sheen =	detected	but below	detectio	n limit (<0	.01 ft)						

TAb._ 4-2

MONITORING AND RECOVERY WELL LIQUID MEASUREMENTS PLATTY KILL CREEK VICINITY

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

					MW-4				
DATE	CASING ELEVATION (ft)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (R)	CORRECTED Q.W. ELEVATION (A)	PRODUCT REMOVED (gal)	COMMENTS
11/8/94	11.39	6.16	7.44	1.28	5.23	3.95	5.08	0.13	
11/28/94	11.39	5.51	6,68	1.17	5.88	4.71	5.73	0.25	
12/22/94	11.39	5,48	0.11	0.63	5.91	5.28	5.83	0.09	
1/4/95	11.39	5.22	6.77	1,55	6.17	4.62	5.97	0.00	
1/17/95	11,39	N/A	N/A	N/A	N/A	N/A	N/A	0.63	Skimmer Ramoved
otal Product	Removed (gal):							1.10 g	al

Note: Product Displacement - Product Thickness x Product Specific Gravity (0.87)

Corrected Depth to Weter - Observed Depth to Weter - Product Displacement

Corrected B.W. Elevation - Casing Elevation - Corrected Depth to Water

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

	MW-5											
DATE	CABING ELEVATION (ft)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (H)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W. ELEVATION (N)	PRODUCT REMOVED (gal)	COMMENTS			
3/21/94	12.09	10.36	10.58	0.2	1.73	1.53	1.70	0,00				
3/22/94	12.09	10.67	10.69	0.02	1.42	1.4	1.42	0.02				
3/23/94	12.09		10.69	0	1.40	1.4	1,40	0.00				
3/25/94	12.09	11.25	11.27	0.02	0.84	0.82	0.84	0.02				
4/4/94	12.09	10.86	10.89	0.03	1.23	1.2	1.23	0.04				
4/8/94	12.09	11.75	11.78	0.03	0.34	0.31	0.34	0.02				
4/22/94	12.09	13.81	14.26	0.45	-1.72	-2.17	-1,78	0.00				
5/2/94	12.09	10.64	10.78	0.14	1.45	1.31	1.43	0.11	possibly water			
5/20/94	12.09	8.92	8,98	0.08	3.17	3.11	3.16	0.13	0.19 gal water			
6/16/94	12.09	13,93	14.04	0.11	-1,84	-1.95	-1.85	0.09	0.38 gal water			
7/1/94	12.09	10.33	10.36	0.03	1.76	1.73	1.76	0.13	0.28 gal water			
7/26/94	12.09	B,80	8,90	0.1	3.29	3.19	3.28	0.15	0,35 gal water			
8/8/94	12.09	10.22	10.35	0.13	1.87	1.74	1.85	0.11	0.38 gal water			
8/30/94	12.09	10,40	10.45	0.05	1.69	1.64	1.68	0.08	0,45 gal water			
9/22/94	12.09	10.45	10.51	0.08	1.64	1.58	1.63	0,08	0.44 gal water			
10/14/94	12.09	10.97	11.13	0,18	1,12	0.98	1,10	0.09	0.35 gal water			
11/8/94	12.09	9.85	10.13	0.48	2.44	1.96	2.38	0.08	0.23 gal water			
11/28/94	12.09	10.23	11.36	1.13	1.86	0.73	1.71	0.00	Skimmer problem			
12/22/94	12.09	9.26	9.31	0.05	2.83	2.78	2.82	0.15				
1/4/95	12.09	8.49	8.51	0.02	3.60	3.58	3.60	0.00				
1/17/95	12.09	n/a	n/e	n/e	n/e	n/e	n/a	0.06	No Levels Taker			
1/27/95	12.09	12,36	12,57	0.21	-0.27	-0,48	-0.30	0.50				
1/30/95	12.09	n/e	n/a	n/e	n/e	n/e	n/a	0,01	No Levels Taken			
2/1/95	12.09		7.43	0	4.66	4.66	4.66	0.13				
2/2/95	12.09	4,0	9.95	0	2.14	2.14	2.14	0.00				
2/3/95	12.09	Q.	11.86	0	0.23	0.23	0.23	0.00				
2/10/95	12.09	n/e	n/a	n/a	n/a	n/s	n/e	nla				
3/31/95	12.09	11.68	11.89	0.01	0.41	0.4	0.41	0.01				
4/19/95	12.09	8,50	8.51	0.01	3.59	3.58	3.59	0.00				
5/12/95	12.09	11.85	11.86	0.01	0.24	0.23	0.24	0.00	4 7 10 10 10 10 10 10 10 10 10 10 10 10 10			
5/12/95	12.09	12.05	12.05	0	0.04	0.04	0.94	0.00				
5/30/95	12.09	11.67	11.67	0	0.42	0.42	0.42	0.00				
8/8/95	12.09	9.61	9.61	0	2.48	2,48	2.48	0.00				

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

				100	MW-5		and the second		
DATE	CABING ELEVATION (ff)	DEPTH TO PRODUCT (H)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (H)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W.	PRODUCT REMOVED (gal)	COMMENTS
6/12/95	12.09	11.92	11.92	0	0.17	0.17	0.17	0.00	
7/21/95	12.09	11.89	11.89	0	0.20	0.2	0.20	0.00	
7/28/95	12.09	9.09	9.09	0	3.00	3	3.00	0.00	
7/31/95	12.09	12.81	12.81	0	-0.72	-0.72	-0.72	0.00	
8/4/95	12,09	sheen	12.32	<0.01	n/e	-0.23	-0.22	drops	_
8/8/95	12.09	13.08	13.09	0.01	-0.99	-1	-0.99	0.00	
8/11/95	12.09	9.37	9.37	<0.01	2.72	2.72	2.73	0.00	
8/16/95	12.09	9.46	9.48	0.02	2.63	2.61	2.63		
8/21/95	12.09	12.41	12.42	0.01	-0.32	-0,33	-0.32		
8/25/95	12.09	13.53	13.53	<0.01	-1.44	-1.44	-1.43		
8/29/95	12.09	7.91	7.91	<0.01	4.18	4.18	4.19		
9/6/95	12.09	10.99	10.99	<0.01	1.10	1,1	1.11		
9/12/95	12.09	10.76	10.75	<0.01	1.34	1.34	1.35		
9/15/95	12.09	9.31	9.31	<0.01	2.78	2.78	2.79		
9/19/95	12.09	12.33	12.34	0.01	-0.24	-0.25	-0.24		
9/22/95	12.09	11.67	11.67	<0.01	0.42	0.42	0.43		
9/25/95	12.09	8,88	8.88	<0.01	3,21	3.21	3.22		
10/3/95	12.09	12.75	12.78	0.03	-0.68	-0.69	-0.88		
10/6/95	12.09	10.80	10.81	0.01	1.29	1.28	1.29		
10/11/95	12.09	8.48	8.48	<0.01	3.61	3.61	3.62		
10/18/95	12.09	12.81	12.87	0.08	-0.72	-0.78	-0.73		
11/1/95	12.09	12.17	12.17	< 0.01	-0.08	-0.08	-0.08	0.03	
11/7/95	12.09	10.98	10.99	0.01	1.11	1.1	1.11	0.05	
	12.09			0	12.09	12.09	12.09		
	12.09			0	12.09	12.09	12.09		
	12.09			0	12.09	12.09	12.09		
	12.09			0	12,09	12.09	12.09		
otal Product	t Removed (gal):				100000000000000000000000000000000000000			1.97	gal

Note:

Product Displacement - Preduct Thickness x Product Specific Gravity (0.87)

Corrected Depth to Water - Cheervad Depth to Water - Product Displacement

Corrected G.W. Bevetion - Casing Bevation - Corrected Depth to Water

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

					MW-15				
DATE	CABING ELEVATION (H)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W. ELEVATION (III)	PRODUCT REMOVED (gal)	COMMENTS
3/21/94	11.51		9.03	0		2.48	2.48	0.00	
3/22/94	11.51		9.13	0		2,38	2.38	0,00	3,
3/23/94	11,51		9.16	0		2,35	2.35	0.00	
3/25/94	11.51	190	9.07	0	*	2,44	2.44	0.00	
4/4/94	11.51		9.10	0		2.41	2.41	0.00	
4/8/94	11.51		8.97	0		2,54	2.54	0.00	
4/22/94	11.51	4	9,75	0	-	1.76	1.76	0.00	1. 3.
5/2/94	11.51		9.76	0		1.75	1.75	0.00	
5/20/94	11.51	400	8.90	0		2,61	2.61	0.00	
8/18/94	11,51	4	8,93	0		2.68	2.58	0.00	
7/1/94	11.51	2	9.08	0	4	2,43	2.43	0.00	
7/26/94	11.51		10.17	0		1.34	1.34	0.00	
8/8/94	11.51	- 00	no	data	collected				
8/30/94	11.51	H	no	dete	collected	4			
9/22/94	11.51	9 1	no	data	collected	3.	1 2 1		
10/14/94	11.61		no	dete	collected				
11/8/94	11.51		no	date	collected			- 2	
11/28/94	11.51	4C-4	10.17	0	1,34	1.34	1,34	0.00	Skimmer Removed
1/4/95	11.51	9.90	9,19	0.01	1.61	2.32	2.33	0.00	
4/19/95	11.51		9.90	0	1.61	1.61	1.61	0.00	
5/2/95	11.51	8.91	8.73	0	2.60	2.78	2.78	0.00	
5/12/95	11.51	9.22	8.91	0	2.29	2,6	2.60	0.00	-
5/23/95	11.51	9.72	9,22	0	1.79	2.29	2,29	0.00	
5/30/95	11.51	9,91	9.72	0	1.60	1.79	1,79	0.00	
6/6/95	11.51	- 12	9.91	0	1.60	1.8	1.60	0,00	
6/12/95	11.51	4	10.24	0	1.27	1.27	1.27	0.00	
7/21/95	11.51	8.87	9.21	0	2.64	2.3	2.30	0.00	
7/28/95	11.51	9,55	8.87	0	1,96	2.64	2.64	0.00	
7/31/95	11.51	9.56	9.55	<0.01	1,95	1.96	1,97	0.00	
8/4/95	11.51	- 41 -	9.56	0	1,95	1.95	1.95	0.00	
8/8/95	11.51	8.87	10.03	<0.01	2.64	1.48	1.49	0.00	
8/11/95	11.51		8.87	0	2.64	2,64	2.64	0,00	
8/15/95	11.51	8,55	8.39	< 0.01	2.96	3.12	3.13	0.00	

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

					MW-15				
DATE	CASING ELEVATION (H)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W.	PRODUCT REMOVED (gel)	COMMENTS
8/21/95	11.51		8.55	0	2.96	2.96	2.96	0.00	
8/25/95	11.51	(a) - 1	9,32	0	2.19	2,19	2.19	0.00	
8/29/95	11,51	7.4	10.15	0	1.36	1.36	1,36	0.00	
9/6/95	11.51		8.55	0	2.96	2.98	2.96	0.00	
9/12/95	11.51	- × - 1	9.92	0	1.59	1.59	1.69	0.00	
9/15/95	11.51		8.76	0	2.76	2.75	2.75	0.00	
9/19/95	11.51	10.	10.15	0	1.36	1.38	1,36	0.00	
9/22/95	11.51		9.54	0	1,97	1.97	1.97	0.00	
9/25/95	11.51	8	10.82	0	0.89	0.69	0.69	0.00	
10/3/95	11.51	8.24	8,24	<0.01	3,27	3.27	3.28	0.00	
10/6/95	11.51	9.31	9.32	0.01	2.20	2,19	2,20	0.00	
10/11/95	11,51	8.44	8.45	0.01	3.07	3.08	3.07	0.00	
10/18/95	11.51	8.34	8.35	0.01	3,17	3,16	3.17	0.00	
11/1/95	11.51	9.44	9.44	<0.01	2.07	2.07	2.07	0.00	
11/7/95	11.51	8.54	8.55	0.01	2.97	2.96	2.97	0.00	
, , , , , ,	11.51				11.51	11.51	11.51		
otal Product	Removed (gal):			5				0.00 g	al

Product Displacement - Product Thickness x Product Specific Granity (0.87)

Corrected Depth to Water - Observed Depth to Water - Product Displacement

Corrected S.W. Elevation * Cosing Elevation - Corrected Depth to Water

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

					MW-20				
DATE	CASING ELEVATION (ft)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (H)	GROUNDWATER ELEVATION (R)	CORRECTED G.W.	PRODUCT REMOVED (gal)	COMMENTS
3/21/94	8.38	6.41	6.42	0.01	1.97	1.96	1.97	0.11	
3/22/94	8.38	6.07	6.08	0.01	2.31	2.3	2.31	0.08	
3/23/94	8.38	6.24	6.27	0,03	2.14	2.11	2.14	0.06	1
3/25/94	8.38	6.17	6.19	0.02	2.21	2.19	2.21	0.09	
4/4/94	8.38	6.14	6.17	0.03	2.24	2.21	2.24	0.22	
4/8/94	8.38	6.53	6.54	0.01	1.85	1.84	1.85	0.13	
4/22/94	8.38	6.38	7.48	1.1	2.00	0.9	1.86	0.14	
5/2/94	8.38	6.35	7.71	1,36	2.03	0.67	1.85	0.13	
5/20/94	8.38	6.03	6.97	0.94	2.35	1.41	2.23	0.13	i.
6/16/94	8.38	6.47	8.27	1.8	1.91	0.11	1.68	0.41	0.09 gal water
7/1/94	8.38	6.31	7.76	1,44	2.07	0.63	1.88	0.10	
7/26/94	8.38	5.90	7.00	1,1	2.48	1.38	2.34	0.13	
8/8/94	8.38	5.94	6.77	0.83	2.44	1.61	2.33	0.22	
8/30/94	8.38	6.07	6.83	0.78	2.31	1.55	2.21	0.36	
9/22/94	8.38	6.04	7.12	1.08	2.34	1.26	2.20	0.09	
10/14/94	8,38	6.13	7.17	1.04	2.25	1.21	2.11	0.12	
11/8/94	8,38	6.34	7.58	1.24	2.04	0.8	1.88	0.00	Skimmer problems
11/28/94	8.38	6.19	7.03	0.84	2.19	1.35	2.08	0.25	
12/22/94	8.38	5.81	6.35	0.54	2.57	2.03	2.50	0.35	
1/4/95	8.38	5.85	6.45	0.6	2,53	1.93	2.45	0.00	
1/17/95	8,38	n/a	n/a	n/a	n/a	n/a	n/a	0.63	No Levels/Skimmer Out
2/1/95	8.38	4,49	6.59	3.89	3.89	2.79	6.17	0.00	Soakease put in.
2/2/95	8.38	5.69	5.70	2,69	2,69	2.68	5.02	0.00	
2/3/95	8.38	5.07	5.70	0.63	3.31	2.68	3.23	0,10	
2/10/95	8.38				-	1 - 161 -		0,00	no levels taken
2/16/95	8.38	6.21	6.47	0.26	2.17	1.91	2.14	0.00	
3/3/95	8.38	5.72	5.98	0.26	2,66	2.4	2.63	0.00	
3/3/96	8.38	5.91	6.05	0.14	2.47	2.33	2.45	0.02	1.5 oz
3/9/96	8.38	5.55	5.69	0.14	2.83	2.69	2.81	0.00	

		MW-20												
DATE	CASING ELEVATION (H)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (H)	GROUNDWATER ELEVATION (R)	CORRECTED Q,W.	PRODUCT REMOVED (gal)	COMMENTS					
3/27/95	8.38	5.97	6.00	0.03	2.41	2,38	2.41	0.00						
4/4/95	8.38	5.44	5.52	0.08	2.94	2.86	2.93	0.00						
4/11/95	8,38	6.24	6.27	0.03	2.14	2.11	2.14	0.00						
4/19/95	8.38	5.50	5.50	0	2.88	2.88	2.88	0.00	0					
5/2/95	8.38	5.15	5.17	0.02	3.23	3.21	3.23	0.00						
5/12/95	8.38	5.21	5.22	0.01	3.17	3.16	3,17	0.00						
5/23/95	8.38	5,62	5.62	0	2.76	2.76	2.76	0.00						
5/30/95	8.38	5.46	5.46	0	2.92	2.92	2.92	0.00	0.25 gal. water					
6/6/95	8.38	5.53	5.53	0	2.85	2.85	2.85	0,00	0.5 gal. water					
6/12/95	8.38	5.22	5.22	0	3.16	3.16	3.16	0.00	0.5 gal. water					
6/15/95	8.38		no	data	collected			0.00	0.5 gal. water					
7/21/95	8.38	6.14	6.40	0.26	2.24	1.98	2.21	0.50						
7/28/95	8.38	6.54	7.77	1.23	1.84	0,61	1,68	0.20	0.3 gal. water					
7/31/95	8.38	6.35	7.27	0.92	2.03	1.11	1.91	0.30	1 1 2 2					
8/4/95	8.38	6.33	7.59	1.26	2.05	0.79	1.89	0.25	-					
8/8/95	8.38	6.13	7.14	1.01	2.25	1.24	2.12	0.25						
8/11/95	8.38	6.01	6,68	0.67	2.37	1.7	2.28	0.20						
8/15/95	8.38	6.23	6.67	0.44	2.15	1.71	2.09	0.50						
8/21/95	8.38	5.93	6.14	0.21	2.45	2.24	2.42	- 0.20						
8/25/95	8.38	6.50	6.85	0.35	1.88	1.53	1.83	0.08						
8/29/95	8.38	6.28	6.72	0.44	2.10	1.66	2.04	0.00						
9/6/95	8.38	5.31	5.59	0.28	3.07	2.79	3.03	0.08						
9/12/95	8.38	6.20	6.62	0.42	2.18	1.78	2.13	0.06						
9/15/95	8.38	6.64	7.44	0.8	1.74	0.94	1.64	0.20	11/					
9/19/95	8.38	6.57	7.02	0.45	1.81	1.36	1.75	0.05	1					
9/22/95	8.38	6.20	6.64	0.44	2.18	1.74	2.12	0.08						
9/25/95	8.38	6.26	6.62	0.36	2.12	1.76	2.07	0.09	1					
10/3/95	8.38	6.14	6,55	0.41	2.24	1.83	2.19	0.02						
10/6/95	8.38	5.88	6.24	0.36	2.50	2.14	2.45	0.04						
10/11/95		6.15	6.56	0.41	2.23	1.82	2.18	0.02	1					

BAYONNE INDUSTRIES, INC., BAYONNE, NJ

March 21, 1994 to November 7, 1995

DATE	CABING ELEVATION IN	DEPTH TO PRODUCT (H)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (R)	CORRECTED G.W. ELEVATION (ft)	PRODUCT REMOVED (g=f)	COMMENTS
10/18/96	8.38	6.74	7.63	0.89	1.64	0.75	1.52	0.02	
11/1/95	8.38	6.66	7.00	0.34	1.72	1.38	1.68	0.02	
11/7/95	8.38	6.18	6,56	0.38	2,20	1.82	2.15	0.02	
	8.38								
	8.38		1						
	8.38								
otal Product	Removed (gal):							7.04 ga	ı

					MW-39				
DATE	CASING ELEVATION (ft)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (N)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (R)	CORRECTED Q.W. ELEVATION (N)	PRODUCT REMOVED (gal)	COMMENTS
8/8/94	12.37		8.56	0		3.81	3,81	0.00	
8/30/94	12.37		11,18	0		1.19	1.19	0.00	1
9/22/94	12.37		9.72	0		2.65	2.65	0.00	
10/14/94	12.37		10.98	0		1.39	1.39	0.00	- ×
11/8/94	12.37		10.66	0		1.71	1.71	0.00	Skimmer Removed
1/4/95	12.37	-14	10.45	0		1.92	1.92	0.00	
5/12/95	12.37	10.55	10.55	0	1.82	1.82	1.82	0.00	
5/23/95	12.37	19 4	11.28			1.09	E	0.00	
5/30/95	12.37		11.02	F - 1	- a- a-	1.35		0.00	
6/6/95	12.37		11.26			1.11	¥	0.00	
8/12/95	12.37		10.21			2.16		0.00	
7/21/95	12.37	10.87	10.88	0.01	1.50	1.49	1.60	0.00	,
7/28/95	12.37		10.04			2.33		0.00	
7/31/95	12.37	9,41	9.41	0	2.96	2.96	2.96	0.00	
8/4/95	12.37		10.98	0		1.41	1.41	0.00	
8/8/95	12.37	sheen	10.22	<0.01	2.15	2.15	2.16	0.00	
8/11/95	12.37	8.87	8.87	<0.01	0.00	3.5	3.51	0.00	
8/15/95	12.37	8.88	8.88	<0.01	3,49	3.49	3.50	0.00	
8/21/95	12.37		10.58	0	1.81	1.81	1.82	0.00	
8/25/95	12.37	10.90	10.90	<0.01	1.47	1.47	1.48	0.00	
8/29/95	12.37		9.01	0	3.36	3.36	3.37	0.00	
9/8/95	12.37	11.05	11.05	<0.01	1.32	1.32	1.33	0.00	2
9/12/95	12.37	9.83	9.83	<0.01	2.54	2.54	2.55	0.00	
9/15/95	12.37	11.35	11.35	<0.01	1.02	1.02	1.03	0,00	
9/19/95	12.37	10.97	10.97	<0.01	1.40	1.4	1.41	0.00	
	12.37	10.07	10.02	0	2,35	2.35	2,35	0.00	Company of the
9/22/95	12.37	8.72	8.72	<0.01	3.65	3,65	3,66	0.00	
9/25/95	12.37	10,59	10.60	0.01	1.77	1.77	1.78	0.00	
10/3/95		9.57	9.58	0.01	2.79	2.79	2.80	0.00	
10/6/95	12.37	9.57	8.92	0.01	3.45	3.45	3.46	0.00	

					MW-39			100	
DATE	CASING ELEVATION (ft)	DEPTH TO PRODUCT (H)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (h)	CORRECTED G.W. ELEVATION (N)	PRODUCT REMOVED (gall)	COMMENTS
10/18/95	12.37	11.40	11.41	0.01	0.96	0.96	0.97	0.00	
11/1/95	12.37	10,99	11.00	0.01	1.37	1.37	1.38	0.00	
11/7/95	12.37	9.49	9.50	0.01	2.87	2.87	2.88	0,00	
	12.37			0	12.37		12.37	0.00	*
otal Product	Removed (gal):							0.00 gr	al
	Product Displacement Corrected Depth to W Corrected G.W. Elevel	ater w Observed Dep	oth to Water - Proc	luct Displacement					
Notel	Tris wall was installed	t on 7/19/94							

					MW-41				
DATE	CASING ELEVATION (N)	DEPTH TO PRODUCT (ff)	DEPTH TO WATER (ff)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (R)	GROUNDWATER ELEVATION (R)	CORRECTED Q.W. ELEVATION (N)	PRODUCT REMOVED (gal)	COMMENTS
11/8/94	9.52	¥.	5.55	0		3.97	3.97	0.00	
1/4/95	9.52		5.48	0		4.04	4.04	0.00	Skimmer Removed
4/19/95	9,52	5.42	5.42	0	4.10	4.1	4.10	0.00	
5/2/95	9.52	5.55	5.55	0	3.97	3.97	3.97	0.00	
5/12/95	9.52	5.51	5.51	0	4.01	4.01	4.01	0.00	
5/23/95	9.62		5.65	0	10	3.87	3,87	0.00	
5/30/95	9.52	5.61	5.51	0	4.01	4.01	4.01	0.00	
6/6/95	9.52		5.54	0		3.98	3.98	0.00	
8/12/95	9.52	- 4	5.49	0	,	4.03	4.03	0.00	
7/21/95	9.52	5.39	5,39	0	4.13	4,13	4.13	0.00	
7/28/95	9.52	n/s	n/a	n/e	n/e	n/e	n/a	0.00	
7/31/95	9.52	n/s	n/e	n/e	n/a	n/a	n/a	0.00	
8/4/95	9.52	sheen	5.44	<0.01	4.08	4.08	4.09	0.00	
8/8/95	9.52	5.55	5.55	< 0.01	3.97	3.97	3.97	0.00	
8/11/95	9,52	5.44	5.44	< 0.01	4.08	4.08	4.08	0.00	
8/15/95	9.52	5.58	5.58	<0.01	3.94	3.94	3.94	0.00	
8/21/95	9.52	18.0	5.53	0	3.99	3.99	3.99	0.00	
8/25/95	9.52		5.73	0	3.79	3.79	3.79	0.00	
8/29/95	9.52		5.65	0	3.87	3.87	3.87	0.00	
9/6/95	9.52	5.74	5.74	< 0.01	3.78	3.78	3.78	0.00	
9/12/95	9.52		5.81	0	3.71	3.71	3.71	0.00	
9/15/95	9.52		5.95	0	3,57	3.57	3.57	0.00	
9/19/95	9.52	5.78	5.78	<0.01	3.74	3.74	3.75	0.00	
9/22/95	9.52	- 100	9.96	0	-0.44	-0.44	-0.44	0.00	
9/25/95	9.52	5.42	5.42	<0.01	4.10	4.1	4.11	0.00	
10/3/95	9.52	5.52	6.53	0.01	3.99	3.99	4.00	0.00	
10/6/95	9.52	5.31	5.31	<0.01	4.21	4.21	4.22	0.00	
10/11/95	9.52	5.46	5.47	0.01	4.06	4.05	4.08	0.00	

					MW-41				
DATE	CABING ELEVATION (H)	DEPTH TO PRODUCT (H)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (n)	GROUNDWATER ELEVATION (II)	CORRECTED G.W.	PRODUCT REMOVED (gal)	COMMENTS
10/18/95	9.52	5.72	5.73	0,01	3.79	3.79	3,80	0,00	
11/1/95	9,52	5.57	6,58	0.01	3.94	3.94	3,96	0,00	
11/7/95	9.52	5.22	5.23	0.01	4.29	4.29	4.30	0.00	
	9.52					9.52	9.52	9-1	
Total Product	Removed (gel):							0.00 ga	d
	Product Displacement Corrected Depth to W Corrected G.W. Deve	ater w Observed Dep	oth to Water - Proc	luct Displacement					0.000
kotes	This well was Installe								

					RW-1				
DATE	CASING ELEVATION (ff)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (H)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W.	PRODUCT REMOVED (gal)	COMMENTS
1/4/95	7.47	4.75	6.20	1.45	2.72	1.27	2.53	0.00	
1/27/95	7.47	4.69	5.05	0.36	2.78	2.42	2.73	0.50	
1/30/95	7.47	n/a	n/e	n/e	n/a	n/e	n/a	0.05	No Levels Taken
2/1/95	7.47	3.64	4.74	1.1	3.83	2.73	3.69	0.50	
2/2/95	7.47	4.77	4.84	0.07	2.70	2.63	2.69	0.11	
2/3/95	7.47	4.91	5.38	0,47	2.56	2.09	2,50	0.10	
2/10/95	7.47		9	1 - 9 - 1	9.			1.00	No Levels Taker
2/16/95	7.47	5.78	6.09	0,31	1.69	1,38	1.65	0.59	38 oz
2/23/95	7.47	¥	14.	1.0		1.1	10	0.59	38 oz
3/3/95	7.47	4.60	5.70	1.1	2.87	1.77	2.73	0.48	31 oz
3/9/95	7.47	4.35	5.32	0.97	3.12	2.15	2.99	0.83	53 oz
3/17/95	7.47	4.54	5.51	0.97	2.93	1.96	2.80	0.75	48 oz
3/27/95	7.47	4.79	5.95	1.16	2.68	1.52	2.53	0.50	
3/31/95	7.47	4,39	5,85	1.48	3.08	1.62	2.89	0.30	
4/4/95	7.47	4.34	5.59	1.25	3.13	1.88	2.97	0.50	
4/11/95	7.47	4.96	8.37	1.41	2.51	1.1	2.33	0.39	X
4/19/95	7.47	4.29	5.57	1.28	3.18	1.9	3.01	0.50	
5/2/95	7.47	3.93	5.74	1,81	3.54	1.73	3.30	0.50	_
5/12/95	7.47	3.97	6.85	1.88	3.50	1,62	3.26	0.50	
5/23/95	7.47	4,35	6.02	1.67	3.12	1.45	2.90	0.50	
5/30/95	7.47	4,16	6.05	1.89	3.31	1.42	3.06	0.40	
6/6/95	7.47	4.17	6.18	2,01	3.30	1.29	3.04	0.10	
6/12/95	7.47	3.89	5.77	1.88	3.58	1.7	3.34	0.50	-
6/15/95	7.47		1	no	dete	collected		0.25	
7/21/95	7.47	5.25	7.00	1.75	2.22	0.47	1.99	0.50	
7/28/95	7.47	5.43	7.80	2.37	2.04	-0.33	1,73	0.20	
7/31/95	7.47	5.41	7.59	2.18	2.06	-0.12	1.78	0.25	
8/4/95	7.47	5,34	7.42	2.08	2.13	0.05	1.86	0.20	

	966				RW-1			NAME OF THE OWNER O																		
DATE	CASING ELEVATION (ft)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (A)	PRODUCT ELEVATION (H)	GROUNDWATER ELEVATION (R)	CORRECTED Q.W.	PRODUCT REMOVED (gwl)	COMMENTS																	
8/8/95	7.47	5,18	7.13	1.95	2.29	0.34	2.04	0.07																		
8/11/95	7.47	5.03	7.07	2.04	2,44	0.4	2.17	0,25																		
8/15/95	7.47	5.13	7.43	2.3	2,34	0.04	2.04	0.10																		
8/21/95	7.47	4.87	8.88	1.99	2.80	0.81	2.34	0.76																		
8/25/95	7.47	5.41	7.48	2.07	2.06	-0.01	1,79	0.47																		
B/29/95	7.47	5.30	6.99	1.69	2.17	0.48	1.95	0.63																		
9/6/95	7.47	5.38	7.09	1.73	2,11	0.38	1.89	0.50	_																	
9/12/95	7.47	5.35	6.89	1,54	2,12	0.58	1.92	0.63																		
9/15/95	7,47	5.67	7.35	1.68	1.80	0.12	1.58	0.63																		
9/19/95	7.47	5.84	7.07	1.43	1.83	1.83	1.83	0.4	1.64	0.67																
9/22/95	7.47	5.37	6.64	1.27		0.83	1.93	0.17																		
9/25/95	7.47 5.37 7.47 5.39		6.72	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	2.08	0.75	1.91	0.14	
10/3/95	7.47	5.27	6.43	1.18	2.20	1.04	2.05	0.55																		
10/6/95	7.47	6.12	8.11	0.99	2.36	1.36	2.22	0.52																		
10/11/95	7.47	5.34	6.63	1.29	2.13	0.84	1.96	0.03																		
10/18/95	7.47	5.92	7.34	1.42	1.56	0.13	1.37	0.52																		
11/1/95	7.47	5.80	6.98	1.18	1.67	0.49	1.52	0.42																		
11/7/95	7.47	5.43	6.45	1.02	2.04	1.02	1.91	0.66																		
	7.47			0	7.47	7.47	7.47																			
otal Produc	t Removed (gal):							19.30	al																	
istet	Product Displacement - Product Thickness a Product Specific Gravity (0.87) Corrected Depth to Water - Observed Depth to Water - Product Displacement Corrected C.W. Elevation - Cesting Elevation - Corrected Depth in Water																									
Notes	This wall was installed	d on 12/07/94																								

					RW-2				
DATE	CASING ELEVATION (H)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (ft)	CORRECTED G.W.	PRODUCT: REMOVED (gal)	COMMENT8
1/4/95	7.33	4.67	5.29	0,62	2.66	2.04	2.59	0.00	
1/27/95	7.33	4.58	4.88	0,32	2.77	2,45	2.73	0.50	
1/30/95	7.33	n/a	n/e	n/a	n/e	n/a	n/a	80,0	No Levels Taken
2/1/95	7.33	4.18	4.21	0.03	3.15	3.12	3.15	0.30	
2/2/95	7.33	4.55	4.74	0.19	2.78	2,59	2.76	0.08	
2/3/95	7.33	5.96	6.00	0.04	1,37	1.33	1.37	0.10	
2/10/95	7.33		THE STREET				1 54	0.25	No Levels Taken
2/16/95	7.33	5.78	8.09	0.31	1.55	1.24	1.61	0.50	
2/23/95	7,33		14		6	12		0.53	No Levels Taken
3/3/95	7.33	4.38	5.39	1.01	2.95	1.94	2.83	0.25	
3/9/95	7.33	4.43	5.70	1.27	2.90	1.63	2.75	0.16	
3/17/95	7,33	4.29	5.77	1.48	3.04	1.50	2.86	0.31	
3/27/95	7.33	4.51	5.95	1.44	2.82	1.38	2.65	0.28	
3/31/95	7.33	4.17	5.95	1.78	3.18	1.38	2.95	0.20	
4/4/95	7.33	4.13	5.75	1,62	3.20	1.58	3.01	0.20	180
4/11/95	7.33	4.75	6.45	1.7	2.58	0.88	2,38	0.11	
4/19/95	7.33	4.02	5.87	1.85	3.31	1.46	3.09	0.28	
5/2/95	7.33	3.67	6.01	2.34	3.66	1.32	3,38	0,50	
5/12/95	7.33	3.74	8.20	2.48	3,59	1.13	3.29	0.50	
5/23/95	7.33	4.41	6.58	2.17	2.92	0.75	2.66	0.50	
5/30/95	7.33	3.93	6.35	2.42	3.40	0.98	3.11	0.60	
6/6/95	7,33	3.93	5.35	2.42	3.40	0.98	3.11	0.66	
6/12/95	7.33	3,61	5.93	2.32	3.72	1.4	3.44	0.60	
7/21/95	7,33	5.25	7.13	1,88	2.08	0.2	1.85	1.60	
7/28/95	7,33	5.25	7.84	2,59	2.08	-0.51	1.77	0.60	
7/31/95	7.33	5.23	7.63	2.4	2.10	-0.3	1.81	0.25	
8/4/95	7.33	5.19	7.54	2.35	2.14	-0.21	1.86	0.07	
8/8/95	7.33	4.98	5.93	1.95	2.35	0.4	2.12	0.07	Jan San San San San San San San San San S

MONITORING AND RECOVERY WELL LIQUID MEASUREMENTS PLATTY KILL CREEK VICINITY

					RW-2				
DATE	CASING ELEVATION (ft)	DEPTH TO	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	PRODUCT ELEVATION (ft)	GROUNDWATER ELEVATION (R)	CORRECTED G.W.	PRODUCT REMOVED (gal)	COMMENTS
8/11/95	7.33	4.84	6.96	2.12	2.49	0,37	2.24	0.25	
8/15/95	7.33	4.98	7.07	2.09	2.35	0.20	2.10	0.20	
8/21/95	7.33	4.69	6.76	2.07	2.64	0.57	2.39	0.07	
8/25/95	7.33	5.24	7,43	2,19	2.09	-0.1	1.83	0.17	
8/29/95	7,33	5.09	7.20	2.11	2.24	0,13	1.99	0.13	
9/6/95	7,33	5,14	7.23	2.09	2.19	0.1	1.94	0.14	
9/12/95	7.33	5.13	7.12	1,99	2.20	0.21	1.96	0.13	
9/15/95	7.33	5.67	7.67	2.1	1.76	-0.34	1.61	0.13	
9/19/95	7.33	5,41	7.40	1.99	1.92	-0.07	1.68	0.09	
9/22/95	7.33	5.13	6.89	1.76	2.20	0.44	1.99	0.14	
9/25/95	7.33	5,16	6.97	1.81	2.17	0.36	1.95	0.13	
10/3/95	7.33	6.39	7.23	0.84	0.94	0.1	0.84	0.03	
10/6/95	7.33	5.01	0.48	1.47	2.32	0.85	2.14	0.08	
10/11/95	7.33	5.17	6.54	1.37	2.16	0.79	2.00	0.17	
10/18/95	7,33	5.87	7.55	1.68	1,46	-0.22	1.26	0.15	
11/1/95	7,33	5.92	7.39	1.47	1.41	-0.06	1.23	0.06	
11/7/95	7,33	5.69	6.95	1.20	1.64	0,38	1,49	0.13	
otal Produc	t Removed (gal):							12.07 g	al
lote:	Product Displacement Corrected Depth to Y Corrected G.W. Eleve	later in Observed De	pth to Water - Pro-	duat Di splacement					
Note:	This well was installe	sd on 12/05/94							

product measurements in the vicinity of the Platty Kill Canal, three separate product plumes are suspected in this area.

4.4.2 Free-phase Product Measurements - Recovery Wells

Liquid measurements were collected from recovery wells Y2-PKB-RW-1, Y2-PKB-RW-2, and Y2-PKB-RW-3 in January and June, 1995, as part of the site-wide liquid measurement program, in addition to every time the passive skimmers installed onto these wells were emptied. Free-phase product thicknesses ranging from 0.31 to 2.59 feet were measured in recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2. Free-phase product has not been detected in recovery well Y2-PKB-RW-3, which is located closest to the canal at the intersection of the bulkhead and product curtain. Tables 4-1 and 4-2 provides the free-phase product measurements collected from the three newly installed recovery wells.

4.4.3 Product Bail-Down Tests

Product bail-down tests were conducted on recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-3 and monitoring wells MW-5 and MW-20. The tabulated and plotted results of the product bail-down tests for the two recovery wells and monitoring well MW-20 are provided in Appendix H. The product baildown test on monitoring well MW-5 was aborted due to the high viscosity of the free-phase product in the well.

The results for MW-20 and Y2-PKB-RW-2 are presented on graphs on Figures H-1, H-2 and H-3 in Appendix H. The plotted data for these graphs are typical of *Type One* curves (Gruszczenski, 1987). These curves are characterized by both a rising water-product interface and a rising top of product level and indicate that the product thickness recorded in the well (during the test) is the actual thickness within the formation. There is no inflection point with *Type One* curves. Based on these curves, the actual product thickness within the formation for wells MW-20 and Y2-PKB-RW-2 is 0.06 foot and 0.15 foot, respectively.

The graphically plotted results for Y2-PKB-RW-1 is typical of a *Type Two* curve and is presented on Figure H-4. This curve type is characterized by a rising product level and a water level that first rises then falls. This curve type displays the inflection point where the water level begins to fall (as discussed earlier). Based on the curve for Y2-PKB-RW-1, the actual product thickness within the formation is 0.11 foot.

The capillary fringe for Y2-PKB-RW-1 has been determined to be 0.06 foot. The test data for Y2-PKB-RW-1 indicates that when the apparent product thickness in the well was reduced to a sheen, product recharged immediately into the well; within one hour the product

accumulation in the well was 0.30 foot. Based on this rate of product recharge per hour, approximately 10 gallons per day could potentially be recovered from recovery well Y2-PKB-RW-1. The test data for Y2-PKB-RW-2 indicates that product accumulation was slower; within one hour the product accumulation in the well was 0.10 foot. Based on this rate of product recharge per hour, approximately 3 gallons per day could be potentially recovered from recovery Y2-PKB-RW-2.

4.4.4 Free-phase Product Characterization

Results of the fingerprint and forensic analyses of free-phase product samples collected from monitoring wells MW-5 and MW-20, and from recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2 are provided in Appendix I. In reference to Appendix I, the ILFC report indicates that wells Y2-PKB-RW-1, Y2-PKB-RW-2 and MW-20 contain a mixture of gasoline, diesel and light lubricating oils. The sample collected from monitoring well MW-5 contained some gasoline components, MTBE, hydrocarbons ranging from diesel to oils and molecular sulfur. The overall chromatographic pattern for monitoring well MW-5 is similar to crude oil. The product analyses indicates the presence of two separate, localized product plumes occurring in the vicinity of the Platty Kill Canal. One in the area of the product curtain which is composed of a mixture of gasoline/diesel/light oils, and one in the vicinity of monitoring well MW-5 that is composed of a product similar to crude oil.

4.4.5 Presence and Distribution of Free-phase Product

On January 4, 1995, liquid measurements were collected from all the wells in the vicinity of the Platty Kill Canal. Free-phase product was measured in wells MW-4, MW-5, MW-20, Y2-PKB-RW-1, and Y2-PKB-RW-2 with thickness ranging from 0.02 feet (MW-5) to 1.55 feet (MW-4). Product thickness measurements from these wells are consistent with historic measurements. Of the five wells where free-phase product was detected only MW-4 and Y2-PKB-RW-1 were greater than 1 foot in thickness. To date, monitoring wells MW-15, MW-19, Y2-MW-39, Y2-MW-40, Y2-MW-41, and recovery well Y2-PKB-RW-3 have remained clear of any free-phase product accumulations. Based on the free-phase product distribution in the area of the Platty Kill Canal and product sample results, it is apparent that three separate localized product plumes exist, one in the vicinity of the product curtain (Y2-PKB-RW-1, Y2-PKB-RW-2, and MW-20); a second one around monitoring well MW-5; and the third plume around monitoring well MW-4.



4.5 Free-Phase Product Recovery

On a weekly basis since March 21, 1994, free-phase product accumulations have been removed from the monitoring wells and recovery wells in the vicinity of the Platty Kill Canal. The results of the free-phase product recovery are provided below.

4.5.1 Monitoring Wells

Since March 21, 1994, approximately 10.11 gallons of free-phase product have been recovered from monitoring wells in the vicinity of the Platty Kill Canal. Appendix J contains a cumulative graph showing the weekly total product recovery for the wells in the vicinity of the Platty Kill Canal, between March 1994 and November 1995. The free-phase product was recovered from the weils with passive skimmers (Petrotrap'). Product thickness measurements collected from monitoring wells MW-4, MW-5, MW-15 and MW-20 between February 1993 and February 1994 indicate the presence of free-phase product at thicknesses ranging from 0.01 feet (MW-15, May 1993) to 2.22 feet (MW-5, July 1993). Table 4-2 provides tabulated summaries and Appendix J provides graphs of product recovered from the wells since March 1994. Appendix J also provides product hydrographs for monitoring wells which depict product and groundwater elevations over time. For monitoring well MW-5, the product recovered from the passive skimmer per site visit ranged from 0.02 gallons (July 27, 1994) to 0.50 gallons (January 27, 1995). The free-phase product in MW-5 has significantly decreased through passive skimming and performance of a product bail-down test. Freephase product thickness in monitoring well MW-5, which was measured to be 2.22 feet in July 1993, was measured to be 0.01 feet on November 7, 1995.

A total of approximately 8.54 gallons of free-phase product has been removed from monitoring well MW-20, including 1.5 gallons that were removed prior to conducting the baildown test. The product recovered from the passive skimmer per site visit ranged from 0.02 gallons to 0.63 gallons. Between March and July 1994, no product accumulations were observed in monitoring well MW-15, thus no product was recovered at this location. As indicated previously, due to the absence of free-phase product, the passive skimmer in monitoring well MW-15 was transferred to monitoring well Y2-MW-39 in July 1994. Due to the absence of free-phase product accumulations in monitoring well Y2-MW-39, the skimmer was later transferred to monitoring well MW-4 in November 1994. Measurements in monitoring well MW-4 historically indicate greater than 1 foot of free-phase product accumulation. Approximately 1.1 gallons of free-phase product has been removed from monitoring well MW-4 between November 8, 1994 and January 17, 1995, at which time the passive skimmer was removed from the monitoring well and installed into one of the recovery wells.

4.5.2 Recovery Wells At The Product Curtain

Since January 4, 1995, approximately 41.37 gallons of free-phase product have been recovered from recovery wells installed on the upgradient side of the product curtain, including five gallons from each recovery well that was removed prior to conducting the baildown tests. The product was recovered from the wells by Petrotrap® passive skimmers. Product thickness measurements collected between January and November 7, 1995 indicate the presence of free-phase product in recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2 at thicknesses ranging from 0.03 feet (Y2-PKB-RW-2, February 1, 1995) to 2.59 feet (Y2-PKB-RW-2, July 28, 1995). To date, well Y2-PKB-RW-3 has remained clear of product accumulations. Table 4-2 provides tabulated summaries and Appendix J provides graphs of product recovered from the wells since January 1995. As shown in these graphs, the average product recovery per site visit is approximately 0.41 gallons. Appendix J provides product hydrographs of the recovery wells which depict product and groundwater elevations over time.

4.6 Sediment Investigation Results

From October 18 to 21, 1994, sixteen shallow sediment cores (Y9-PKC-SED-01 through Y9-PKC-SED-16) were collected from the bed of Platty Kill Canal using a floating platform mounted vibracoring device. Eight sediment cores were collected outside of the sheetpile dam that separates the Platty Kill Canal and the Kill Van Kull waterways, and eight were collected from inside the sheetpile dam. Figure E-1 in Appendix E provides the sediment core locations. For each core location, one aluminum core tube was driven between 5 and 10 feet into the canal bed. Upon extrusion of the sediment core from the tube, the sediments were characterized and two sediment samples were collected for analysis.

4.6.1 Stratigraphic Characterization - Platty Kill Canal

The sediment coring logs are provided in Appendix K. In reference to Appendix K, the sediments observed in the Platty Kill Canal primarily consist of thin deposits of black silt and clay overlying coarser sediments (i.e., sand and gravel, sand-silt-clay mixtures). In general, the highest PID readings (100 to 166 ppm) were observed at depths greater than 3 feet. The sediment boring logs were used to generate stratigraphic cross sections which are presented on Figure K-1 in Appendix K. Cross Section A-A' identifies the stratigraphic units in the northernmost portion of the Platty Kill Canal, from the earthen dam at the Platty Kill Pond to the bridge spanning the canal. Cross Section B-B' identifies the stratigraphic units from the bridge spanning the canal to the sheetpile dam at the mouth of the Platty Kill Canal. Cross Section C-C' identifies the stratigraphic units across the mouth of the Platty Kill Canal.



Though measurements may be tidally influenced, the bed of the Platty Kill Canal at the time of the sampling program was found to occur between 2 and 15 feet below the water surface. The canal bed topographically slopes towards the Kill Van Kull.

In reference to Cross Section A-A', a silt unit, approximately 5 feet thick, conformably overlies a unit of silt and clay in the northernmost part of the Platty Kill Canal. In the central and southern portions of the Platty Kill Canal, Cross Section B-B', the silt and clay unit occurs from the top of the canal bed to approximately 4 feet below the bed surface. Below 4 feet, underlying the silt and clay unit, silt and clay with varying amounts of coarse sand and gravel were observed. Immediately around the sheet pile dam, Cross Section B-B', silt and clay overlie medium sand with some silt. As shown Cross Section C-C', a silt unit occurs at the mouth of the Platty Kill Canal (south of sediment cores Y9-PKC-SED-12, Y9-PKC-SED-13 and Y9-PKC-SED-15) from 0 to 8 feet below the top of the canal bed. Given the 100-year history of the site, it can be assumed that the Platty Kill Canal sediments have been reworked extensively by either natural (i.e., scour, deposition) or anthropogenic processes (i.e., dredging). An attempt was made to correlate the stratigraphic information obtained from the canal with that of the soil borings obtained from the area adjacent to the canal. However, due to the relative completion depths of the soil and sediment borings and the potential sediment reworking processes, a stratigraphic correlation was not possible.

4.6.2 Grain Size Distribution Analyses

Grain size distribution analysis was to be performed on each of the sediment samples collected, to confirm the sediment characterization. However, due to the oily nature of the sediment collected (all sediments were coated in petroleum), only four out of 32 samples collected for geotechnical analysis could be analyzed. This included two samples each from sediment core Y9-PKC-SED-01 and Y9-PKC-SED-06. The grain size distribution results for these samples are provided contained in Appendix L. Sediment sample Y9-PKC-SED-01A was collected from 0 to 3 feet below the canal bed, in the northern portion of the canal. The sediment in this sample was classified by PSS as black, fine sand and silt with trace amounts of decayed plant and root matter. Sediment sample Y9-PKC-SED-01B was collected from the three to six foot depth interval. The sediment in this sample was classified by PSS as black to dark gray, fine sand with silt and trace amounts of medium sand and decayed plant matter. The PSS classification of this sediment core correlates fairly well with the sample description provided by the ENSR Field Geologist.

Sediment sample Y9-PKC-SED-6B was collected from 4.5 to 5.0 feet below the top of the canal bed, in the central portion of the canal. Sediments in this sample were classified by PSS as dark gray to black, silty fine to coarse sand with trace amounts of fine gravel, cinders,



wood and root matter. Sediment sample Y9-PKC-SED-06C was collected from five to six feet below the canal bed. Sediments in this sample were classified by PSS as dark gray to black fine to coarse sand with some clayey silt. Though the PSS classification of sediment core sample Y9-PKC-SED-6C correlates well with the sample description provided by the ENSR Project Geologist, the description of sample Y9-PKC-SED-6B does not. The ENSR sediment boring log of Y9-PKC-SED-06 (Appendix K) reports a sizable clay fraction (50%) and omits the identification of fine gravel, cinders and root fibers. These discrepancies may be attributed to the manner in which the geotechnical sample is collected or natural heterogeneities occurring with the sample core.

4.6.3 Chemical Analysis

A total of thirty four sediment samples were collected for analysis of total petroleum hydrocarbons (TPH), pH, and total organic carbon (TOC); two from each sediment core and two duplicate samples. In addition, twelve of these samples, plus two duplicate samples, were further analyzed for target compound list (TCL) volatile and semi-volatile organics and target analyte list (TAL) inorganics. These samples included six samples from three sediment core locations inside of the sheetpile dam, and six samples from three sediment core locations outside of the sheetpile dam. All samples were submitted for chemical analysis to IEA Laboratories, Whippany, New Jersey laboratory certification #14530.

The laboratory analytical results were validated by ENSR's validation group in Acton, Massachusetts. The analytical results were found to be valid and may be used for decision making purposes. Table 4-3 provides a summary of the analytical results of the sediment sampling program. Table 4-3 compares the analytical results to NJDEP's Impact to Groundwater Soil Cleanup Criteria (NJAC 7:26D) and proposed risk-based Alternative Concentration Limits (ACLs). For further discussion on the derivation of the ACLs refer to Section 4.6.4.1. Table 4-4 provides a quick-reference summary of TPH and TOC concentrations for each sediment sample collected. The analytical results for the quality assurance samples have been summarized in Table 4-5. Appendix M provides the validated analytical summary pages for the sediment sampling program. A copy of the IEA analytical report packages for the sediment investigation have been submitted separately.

To aid in the evaluation of the analytical results, the sediments were divided into two depth intervals, the upper zone which includes the zone from the top of the canal bed to a depth of four feet; and the lower zone which includes the sediment zone greater than four feet. The upper and lower zone are discussed separately in the following sections.



For evaluation and presentation purposes, analytical results have been separated into the following groups: total petroleum hydrocarbons (TPH); total benzene, toluene, ethylbenzene and xylenes (BTEX); total semi-volatile organic compounds (SVOC), total polyaromatic hydrocarbons (PAH) and metals.

4.6.3.1 Platty Kill Canal Upper Sediment Zone (0 To 4 Feet)

Total petroleum hydrocarbons in the upper sediment zone were detected in all sixteen samples collected from this zone, at concentrations ranging from 62 ppm (Y9-PKC-SED-12A) to 150,000 ppm (Y9-PKC-SED-03A). The TPH concentrations in the upper sediment zone have been plotted and contoured on Figure N-1 in Appendix N. As shown on Figure N-1, the highest TPH concentrations occur in the northern portion of the Platty Kill Canal, nearest to the £arthen dam that separates the canal from the Platty Kill Pond. The isoconcentration lines shown on Figure N-1 depict a TPH concentration gradient which decreases towards the mouth of the Platty Kill Canal. TPH concentrations in the upper zone outside of the sheet pile dam are below 1000 ppm, ranging from 920 to 62 ppm.

Six of the samples from the sediment cores (Y9-PKC-SED-01A, -06A, -08A, -11A, -15A, and -16A) were further analyzed for TCL volatile and semi-volatile organic compounds. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in three of the sediment core samples (Y9-PKC-SED-01A, -06A, and -08A) with concentrations ranging from 0.33 ppm (Y9-PKC-SED-08A) to 33.9 ppm (Y9-PKC-SED-01A). Figure N-2 provides an isoconcentration map of BTEX concentrations in the upper sediment zone. As shown at sample locations Y2-PKC-SED-11A, Y2-PKC-SED-15A and Y2-PKC-SED-16A, BTEX was not detected in the upper sediment zone outside of the sheetpile dam. BTEX concentrations that are greater than 1 ppm remain in the most northern reaches of the canal. Based on the isoconcentration maps, there is good correlation in terms of the BTEX and TPH concentration distribution in the sediment.

Semi-volatile compounds (SVOC) were detected in all six sediment cores, with total SVOC concentrations ranging from 16.57 ppm (Y9-PKC-SED-15A) to 1088 ppm (Y9-PKC-SED-01A). Of the SVOC detected in these sediment cores, polyaromatic hydrocarbon compounds (PAHs) make up a significant portion (19% to 81%) of the SVOCs detected. PAH concentrations range from 8.99 ppm (Y9-PKC-SED-15A) to 432.8 ppm (Y9-PKC-SED-01A). The SVOC and PAH concentrations in the upper sediment zone have been plotted and contoured on Figures N-3 and Figure N-4, respectively. The highest SVOC and PAH concentrations occur in the northern portion of the Platty Kill Canal. The SVOC and PAH concentration gradient decreases steeply towards the mouth of the Platty Kill Canal. Total SVOC and PAH concentrations in the upper sediment zone outside of the sheetpile dam were at or below 123 ppm and 100 ppm, respectively. As with the BTEX concentrations, the distribution of SVOC

SAMPLING I LAB ID NUI SAMPLING D	MBER 44159007	PKCSED-6A 44142005 0-4.5 ft.	PKCSED-8A 44142001 0-3.25 ft.	IMPACT TO GROUNDWATER	RISKED-BASED ALTERNATIVE CLEANUP
ANALYTE SAMPLING		10/20/94	10/20/94	CRITERIA	LEVELS
VOLATILE ORGANICS					
Acetone		The second	0.22J	100	NC
Benzene	3.3	J 0.014J		1	2820
Chlorobenzene		J		1	NC
Ethylbenzene	24	J		NC	NC
Xylenes (total)	6.6	J 0.017J	0.033J	NC	NC
SEMI-VOLATILE ORGANIC	s				
1.3-dichlorobenzene	7.6	J		NC	NC
1,4-dichlorobenzene		J		NC	NC
2-Methylnaphthalene		J 2.3 J	0.34J	NC	NC
4-chloroaniline			0.47J	NC	NC
Acenaphthene	46	2.8 J	0.45J	100	NC
Acenaphthylene	2.6	J		NC	NC
Anthracene	16		0.91J	100	NC
Benzo(a)anthracene	16	2.1 J	0.78J	500	150
Benzo(a)pyrene	11	J 1.3 J	0.65J	100	15
Benzo(b)fluoranthene	6.4	J 1.1 J	0.65J	50	150
Benzo(g,h,i)Perylene	2.8	J 0.7 J	0.28J	NC	NC
Benzo(k)fluoranthene	2.4	J 0.59J	0.46J	500	1500
Bis(2-ethylhexyl)phthalate	26	25 BJ	16 BJ		7800
Chrysene	28		1.2 J	500	15000
Di-n-octylphthalate	3.6	J 3.5 J	1.6 J	NC	NC
Dibenzofuran	27			NC	NC
Fluoranthene	13	J 4.7 J	1.9 J		NC
Fluorene	67			NC	NC
Indeno(1,2,3-c,d)pyrene	1.6		0.17J	NC	150
Isophorone	16	3.1 J	0.6 J		NC
Naphthalene		0.775	0.12J		NC
Phenanthrene	170	7.6 J	1.4 J		NC
Pyrene	50	4.9 J	2.6 J	NC	NC

All results expressed in parts per million. Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

* = Duplicate of previous sample.

	SAMPLING NAME	PKCSED-0		PKCSED-64	4	PKCSED-8A	IMPACT	RISKED-BASED
	LAB ID NUMBER	44159007		44142005		44142001	ТО	ALTERNATIVE
	SAMPLING DEPTH	0-3 ft.		0-4.5 ft.		0-3.25 ft.	GROUNDWATER	CLEANUP
ANALYTE	SAMPLING DATE	11/03/94		10/20/94		10/20/94	CRITERIA	LEVELS
INC	ORGANICS							
Aluminium		6110	J	4900	J	16900 3	NC.	NC
Arsenic		324	J	12.2	J	24.4	NC.	683
Barium		1330		59.7	4.00	166	NC	583000
Beryllium		0.	57B	0.3	6B	1.2 E	NC.	NC
Cadmium		4.	3	2.8		8.5	NC	NC
Calcium		7230	J	1590	J	5990 3	NC NC	NC
Chromium			R	98.1	J	292 3	NC NC	NC
Cobalt		27.	4	2.8	В	9.2 1	NC NC	NC
Copper		779		205		602	NC	326000
Iron		93000	-	11600	J	33600 3	NC NC	NC
Lead		4700	J	164	J	351 3	NC.	NC
Magnesium		5630	J	2820	J	8440	NC NC	NC
Manganese		234	J	109	J	415	NC NC	NC
Mercury		0.	3.5	2		6.7	NC	NC
Nickel		125		22		57.3	NC	NC
Potassium			R	1200	J	3990 3	, NC	NC
Selenium			R	0.4	8J		NC	NC
Silver				2	J	8.1 3	NC NC	NC
Sodium		3190		5450		10200	NC	NC
Thallium		0.	25J			0.763	I NC	NC
Vanadium		117		23.3	J	62.2		NC
Zinc		1010	J	194	J	634	NC NC	NC

All results expressed in parts per million. Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

R = Rejected Analysis* = Duplicate of previous sample.

SAMPLING NAME	PKCSED-11A	PKCSED-15A	PKCSED-16A	IMPACT	RISKED-BASED
LAB ID NUMBER	44171005	44084004	44084003	TO	ALTERNATIVE
SAMPLING DEPTH	0-2.5 ft.	0-4.25 ft.	0-5 ft.	GROUNDWATER	CLEANUP
ANALYTE SAMPLING DATE	10/19/94	10/18/94	10/18/94	CRITERIA	LEVELS
VOLATILE ORGANICS					
Acetone		0.36J	170 J	100	NC
SEMI-VOLATILE ORGANICS					
2-Methylnaphthalene	3.2 J	0.14J	0.61J	NC	NC
Acenaphthene	12	0.11J	0.41J	100	NC
Acenaphthylene	0.48J	0.21J		NC	NC
Anthracene	6.9 J	0.48J	1 J	100	NC
Benzo(a)anthracene	3.4 J	0.78J	0.91J	500	150
Benzo(a)pyrene	1.8 J	0.75J	0.96J	100	15
Benzo(b)fluoranthene	1.8 J	0.73J	0.93J	50	150
Benzo(g,h,i)Perylene	0.65J	0.22J	0.58J	NC	NC.
Benzo(k)fluoranthene	1.2 J	0.63J	0.75J	500	1500
Bis(2-ethylhexyl)phthalate	12 JB	6.6 J	16 J	100	7800
Butylbenzylphthalate		0.37J	11111	100	NC
Carbazole	0.62J		- 2 4	NC	NC
Chrysene	3.4 J	0.91J	1.3 J	500	15000
Di-n-octylphthalate	1.3 J	0.37J	0.56J	NC	NC
Dibenzofuran	5.9 J			NC	NC
Fluoranthene	18 J	1.4 J	2.3 J	NC.	NC
Fluorene	10 J	0.15J		NC	NC
Indeno(1,2,3-c,d)pyrene	0.7 J	0.22J	0.52J	NC	150
Naphthalene	1.7 J	0.18J		NC	NC
Phenanthrene	26 J	0.42J	1.4 J	NC	NC
Pyrene	12 J	1.8 J	2.1 J	NC	NC

All results expressed in parts per million. Blank = Not Detected or Not Analyzed

J = Estimated Value
B = Detected in an associated blank.

NC = No Criteria

* = Duplicate of previous sample.

	SAMPLING NAME	PKCSED-11	A	PKCSED-15A	PKCSED-16A	IMPACT	RISKED-BASED
	LAB ID NUMBER	44171005		44084004	44084003	TO	ALTERNATIVE
	SAMPLING DEPTH	0-2.5 ft.		0-4.25 ft.	0-5 ft.	GROUNDWATER	CLEANUP
ANALYTE	SAMPLING DATE	10/19/94		10/18/94	10/18/94	CRITERIA	LEVELS
INOF	RGANICS						
Aluminium		16200	J	16800	15000	NC	NC
Arsenic		27.3		13.8	18.4	NC	683
Barium	3.73	150		124	129	NC	583000
Beryllium		1	В	1.1 B	0.89B		NC
Cadmium		5.4		2.7	3.5	NC	NC
Calcium		6860	J	R	R	NC	NC
Chromium		211	J	137	155	NC	NC
Cobalt		12.7	В	14.6	11.9	NC	NC
Copper		268		168	209	NC	326000
Iron		39500	J	37000	36000	NC	NC
Lead		222		203 J	191 J	NC	NC
Magnesium	1.14	9930	J	11700	8470	NC	NC
Manganese		468		552	544	NC	NC
Mercury	7	3.5	5	2.2	2.7	NC	NC
Nickel		68.6	5	76.3	43	NC	NC
Potassium			R	4150 J	3280 J	NC	NC
Silver		7.4		8.3	7.5	NC	NC
Sodium		10700		11000	8970	NC	NC
Vanadium		51.6	J	52.4	48.4	NC	NC
Zinc		401	J	300	339	NC	NC

All results expressed in parts per million.
Blank = Not Detected or Not Analyzed
J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

R = Rejected Analysis
* = Duplicate of previous sample.

SAMPLING NAME	PKCSED-01B	PKCSED-6B	PKCSED-6C*	PKCSED-8B	IMPACT	RISKED-BASED
LAB ID NUMBER	44149008	44142006	44142007	44142002	TO	ALTERNATIVE
SAMPLING DEPTH	3-6 ft.	4.5-9 ft.	4.5-9 ft.	3.25-6.5 ft.	GROUNDWATER	CLEANUP
ANALYTE SAMPLING DATE	10/21/94	10/20/94	10/20/94	10/20/94	CRITERIA	LEVELS
VOLATILE ORGANICS					+ A	
1,2-Dichloroethane	0.73J				1	10,70
Benzene	28 J	2.7 J	3.1 J	0.017 J	1	2820
Chlorobenzene	65 J			0.14 J	1	. NC
Ethylbenzene	57 J	23 J	24 J		100	NC
Toluene	1 J	5.7 J	3.9 J		500	NC
Xylenes (total)	81 J	98 J	79 J	0.027 J	10	NC
SEMI-VOLATILE ORGANICS						
1,4-dichlorobenzene				0.66J	1001	NC
2-Methylnaphthalene	240 J	- 220 J	330 J	11 J	NC	NC
Acenaphthene	22	14 J	19 J	2.6 J	100	NC
Acenaphthylene	2.8 J			1.1 J	NC	NC
Anthracene	13			3.7 J	100	NC
Benzo(a)anthracene	9.7 J	9 J	14 J	2.2 J	500	150
Benzo(a)pyrene	7.6 J	5.9 J	9.2 J	1.4 J	100	15
Benzo(b)fluoranthene	4.9 J	3.2 J	5.3 J	0.97J	50	150
Benzo(g,h,i)Perylene	2.2 J	3.7 J	6.2 J	0.6 J	NC	NC
Benzo(k)fluoranthene	3.1 J			0.63J	500	1500
Bis(2-ethylhexyl)phthalate	12 J	7.9 J	8.6 J	16 BJ	100	7.800
Carbazole	4 J			0.61J	NC	NO
Chrysene	13 J	12 J	18 J	2.8 J		15000
Di-n-octylphthalate	3.5 J			1.1 J		NO
Dibenzofuran	12 J			0.51J		NC
Fluoranthene	12 J	10 J	14 J	4.9 J	100	NC
Fluorene	32	24 J		3.1 J		.NC
Indeno(1,2,3-c,d)pyrene		3.1 J			500	150
Isophorone	12 J		5.2 J		50	NC
Naphthalene		66 J		2.4 J		NO
Phenanthrene	78	64 J	92 J	10 J		NC
Pyrene	31	24 J	35 J	5.4 J	100	NC

All results expressed in parts per million.
Blank = Not Detected or Not Analyzed
J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

* = Duplicate of previous sample.

SAMPLING NAME	PKCSED-01B	PKCSED-6B	PKCSED-6C*	PKCSED-8B	IMPACT	RISKED-BASED
LAB ID NUMBER	44149008	44142006	44142007	44142002	TO	ALTERNATIVE
SAMPLING DEPTH	3-6 ft.	4.5-9 ft.	4.5-9 ft.	3.25-6.5 ft.	GROUNDWATER	CLEANUP
ANALYTE SAMPLING DATE	10/21/94	10/20/94	10/20/94	10/20/94	CRITERIA	LEVELS
INORGANICS						
Aluminium	6220 J	6070 J	8490 J	14400 J	NC	NC
Arsenic	145 J	37.3 J	44 J	54.9 J	NC	683
Barium	200	111	128	297	- NC	583000
Beryllium	0.49B	0.53B	0.72B	1.2 B		NC
Cadmium	3	4.4	5.7	13.5	NC	NC NC
Calcium	5680 J	2490 J	3240 J	8880 J		NC.
Chromium	R	189 J	238 J	441 J		NC
Cobalt	8.2	5.7	6.8 B	14.5	NC	NC
Copper	900	216	281	696	NC	326000
Iron	40500	18700 J	25100 J	45000 J	NC	NC
Lead	1300 J	521 J	698 J	741 J	NC	NC
Magnesium	6000 J	3160 J	4090 J	7360 JE	NC	NC
Manganese	163 J	164 J	223 J	1670 J	NC	NC
Mercury	4.5	2.1	2.4	6.8	NC	. NC
Nickel	183	28.3	37.2	74	NC	NC
Potassium	R	1350 J	The second secon	2880 J		NC
Selenium	R	1 J		1.6 J	NC	NC
Silver		1.2 J	3.8 J	11.4 J	NC	NC
Sodium	3710	3920	5120	3760	NC	NC
Thallium	0.32J			0.54J	NC	NC
Vanadium	41.3	16.8 J	41.6 J	82.3 J	NC	NC
Zinc	453 J	344 J	492 J	748 J	NC	NC

All results expressed in parts per million. Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.

E = Serial Dilution is not within Control Limits

NC = No Criteria

R = Rejected Analysis

* = Duplicate of previous sample.

TABLE 4-3 (CONT'D) SUMMARY OF ANALYTICAL RESULTS PLATTY KILL CANAL SEDIMENT INVESTIGATION PLATTY KILL CANAL INTERIM REMEDIAL ACTION BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

SAMPLING NAME	PKCSED-11B	PKCSED-15B	PKCSED-16B	PKCSED-16C*	IMPACT	RISKED-BASED
LAB ID NUMBER	44171006	44084005	44084002	44084001	TO	ALTERNATIVE
SAMPLING DEPTH	2.5-5 ft.	4.25-8.5 ft.	5-10 ft.	5-10 ft.	GROUNDWATER	CLEANUP
ANALYTE SAMPLING DATE	10/19/94	10/18/94	10/18/94	10/18/94	CRITERIA	LEVELS
VOLATILE ORGANICS						
Acetone		0.13J			100	NC
Chlorobenzene			1.5 J	0.49J	1	NC
Xylenes (total)			3 J	1.5 J	NC	NC
SEMI-VOLATILE ORGANICS						
1,4-dichlorobenzene			0.72J	0.61J	NC	NC
2-Methylnaphthalene	1.9 J	1 J	12 J	9.3 J	NC	NC
4-chloroaniline	0.7	1 1 1			NC	NC
Acenaphthene		0.61J	2.5 J	2 J	100	- NC
Anthracene	1.6 J	1.5 J	11 J	9.9 J	100	NC
Benzo(a)anthracene	1.7 J	1.1 J	2.9 J	2.4 J	500	150
Benzo(a)pyrene	1.1 J	1.2 J	2.2 J	2 J	100	15
Benzo(b)fluoranthene	0.94J	0.92J	2.1 J	1.6 J	50	150
Benzo(g,h,i)Perylene	0.51J	0.5 J	0.8 J	0.61J	NC	NC
Benzo(k)fluoranthene	0.9 J	0.83J	1.4 J	1.6 J	500	1500
Bis(2-ethylhexyl)phthalate	32 J	19 J	17 J	16 J	100	7800
Carbazole			2.7 J	2.4	NC	· NC
Chrysene	1.9 J	1.4 J	4.2 J	3.5 J	500	150000
Di-n-octylphthalate	2.3 J	0.84J	1.3 J	0.92J	NC	NC
Fluoranthene	2.9 J	2.6 J	8.7 J	7.1 J	NC	NO
Fluorene	1.1 J	0.68J	4.8 J	3.9 J	NC	NC
Indeno(1,2,3-c,d)pyrene		0.5 J	0.58J	0.66J	NC	150
Isophorone	***		4.5 J		NC	NC
Naphthalene	0.74J	0.94J	1.9 J	1.6 J	NC	NC
Phenanthrene	3.6 J	2.2 J	18 J	14 J	NC	NC
Pyrene	3.3 J	2.4 J	8.7 J	6,9 J	NC	NC

All results expressed in parts per million.

Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

* = Duplicate of previous sample,

TABLE 4-3 (CONT'D) SUMMARY OF ANALYTICAL RESULTS PLATTY KILL CANAL SEDIMENT INVESTIGATION PLATTY KILL CANAL INTERIM REMEDIAL ACTION BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

	SAMPLING NAME	PKCSED-11B	PKCSED-15B	PKCSED-16B	PKCSED-16C*	IMPACT	RISKED-BASED
	LAB ID NUMBER	44171006	44084005	44084002	44084001	TO	ALTERNATIVE
	SAMPLING DEPTH	2,5-5 ft.	4.25-8.5 ft.	5-10 ft.	5-10 ft.	GROUNDWATER	
ANALYTE	SAMPLING DATE	10/19/94	10/18/94	10/18/94	10/18/94	CRITERIA	LEVELS
IN	IORGANICS						
Aluminium		17600 J	15800	15600	13800	NC	NC
Arsenic		25.7	19.6	62.9	51.7	NC	683
Barium		221	158	459	377	NC	583000
Beryllium		1.2 B	0.92B	1.1 B	0.93B	NC	NC
Cadmium		9.9	5.8	13	12.8	NC	NO
Calcium		7140 J	R	R	R	NC-	NC
Chromium		388 J	236	460	403	NC	NC
Cobalt		14.3	10.6 B	13.2	10.5 B	NC	NO
Copper		561	311	484	432	NC	326000
Iron		44600 J	34500	38000	31800	NC	NC
Lead		444	275 J	609 J	409 J		NO
Magnesium		8750 J	8040	8220	7750	NC	NO
Manganese		500	474	428	378	NC	NC
Mercury		3.1	7.1	10.1	9	NC	NO
Nickel		66.4	51.2	73.5	68	NC	NC
Potassium		R	3690 J	3600 J	3180 J		NO
Silver		12.4	8.6	14.1	11.4	NC	NC
Sodium		7500	9220	9390	8940	NC	NO
Thallium			0.23J	0.3 J			NO
Vanadium		66.7 J	51.9	85.2	69.6	NC	NO
Zinc		705 J	460	740	653	NC	NO

All results expressed in parts per million. Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.

NC = No Criteria

R = Rejected Analysis
* = Duplicate of previous sample.

TABLE 4-4 SUMMARY OF ANALYTICAL RESULTS PLATTY KILL CANAL SEDIMENT INVESTIGATION PLATTY KILL CANAL INTERIM REMEDIAL ACTION BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

SAMPLING NAME	TPH	TOC
PKCSED-01A	100,000	160,000
PKCSED-01B	40,000	83,000
PKCSED-02A	17,000	138,000
PKCSED-02B	88,000	85,000
PKCSED-03A	150,000	154,000
PKCSED-03B	50,000	140,000
PKCSED-04A	39,000	99,300
PKCSED-04B	70,000	122,000
PKCSED-5A	5,600	70,000
PKCSED-5B	10,000	160,000
PKCSED-6A	2,100	63,400
PKCSED-6B	23,000	91,800
PKCSED-6C	21,000	120,000
PKCSED-7A	920	48,500
PKCSED-7B	9,600	83,000
PKCSED-8A	800	42,000
PKCSED-8B	960	63,200
PKCSED-9A	920	30,200
PKCSED-9B	4,800	44,600
PKCSED-10A	590	22,200
PKCSED-10B	250	32,100
PKCSED-11A	510	39,800
PKCSED-11B	380	36,400
PKCSED-12A	62	22,800
PKCSED-12B	360	41,700
PKCSED-13A	110	34,400
PKCSED-13B	2,200	38,400
PKCSED-14A	250 J	35,900
PKCSED-14B	810 J	38,700
PKCSED-15A	170 Ј	28,300
PKCSED-15B	310 Ј	30,800
PKCSED-16A	91 J	31,000
PKCSED-16B	1,700 J	47,200
PKCSED-16C	1,200 J	43,600

All results expressed in parts per million.

J = Estimated Value

TPH = Total Petroleum Hydrocarbon

TOC = Total Organic Carbon

TABLE 4-5 SUMMARY OF QUALITY ASSURANCE SAMPLE RESULTS PLATTY KILL CANAL SEDIMENT INVESTIGATION PLATTY KILL CANAL INTERIM REMEDIAL ACTION BAYONNE INDUSTRIES, INC. BAYONNE, NEW JERSEY

	SAMPLING NAME	FB-1	FB-2	FB-3	FB-4
	LAB ID NUMBER	44084008	44171001	44142010	44159009
ANALYTE	SAMPLING DATE	10/18/94	10/19/94	10/20/94	10/21/94
VOLATIL	E ORGANICS	*			
Acetone			0.026 J	0.012	
INO	RGANICS				
Aluminium			0.0695B	0.046 J	
Barium	-2	0.0013B	0.0031B		0.0013B
Beryllium					0.0001B
Calcium		0.038 B	0.398 B	0.0308J	0.0308B
Copper			0.0022B		-
Iron		0.057 B	0.105	0.17	0.0988B
Lead				0.0038	0.0169
Magnesium			0.119 B		
Manganese		0.0012B	0.0074B		
Sodium			0.335 B	0.18 J	0.117 B
Zinc		0.0105B	0.04	0.0107J	0.0117B

All results expressed in parts per million.

Blank = Not Detected or Not Analyzed

J = Estimated Value

B = Detected in an associated blank.



and the PAH concentrations in the sediment display a good correlation with the TPH concentrations.

Of the metals detected in the sediment arsenic, lead, and zinc were the most significant in terms of elevated concentrations. The highest lead, zinc, and arsenic in the upper sediment zone were detected in the northern most portion of the canal at sediment core location Y9-PKC-SED-01. In general, the concentrations at this location were at least one magnitude of order higher than that of the other sediment sample locations. Inside of the sheetpile dam, lead concentrations in the upper sediment zone ranged from 164 ppm to 4,700 ppm; arsenic concentrations ranged from 12.2 ppm to 324 ppm; and zinc ranged from 194 ppm to 1,010 ppm. Outside of the sheetpile dam lead concentrations ranged from 191 ppm to 222 ppm; arsenic ranged from 13.8 to 18.4 ppm; and zinc ranged from 300 to 401 ppm.

4.6.3.2 Platty Kill Canal Lower Sediment Zone

Total petroleum hydrocarbons were detected in all sixteen samples collected from the lower sediment zone, with concentrations ranging from 250 ppm (Y9-PKC-SED-10B) to 88,000 ppm (Y9-PKC-SED-02B). The TPH concentrations in the lower sediment zone have been plotted and contoured on Figure N-5. As shown on Figure N-5, the highest TPH concentrations occur at the northern wall of the Platty Kill Canal (nearest to the Exxon Lube Plant property). The isoconcentration lines depict elevated TPH concentrations which gradually decreases to 10,000 ppm immediately inside of the sheetpile dam. TPH concentrations in the lower sediment zone outside of the sheetpile dam range from 250 ppm to 4,800 ppm.

Six of the samples from the sediment cores (Y9-PKC-SED-01B, -06B, -08B, -11B, -15B, and -16B) were further analyzed for TCL volatile and semi-volatile organic compounds. BTEX compounds were detected in four of the sediment core samples (Y9-PKC-SED-01B, -06B, -08B, and -16B) with concentrations ranging from 0.044 ppm (Y9-PKC-SED-08B) to 167 ppm (Y9-PKC-SED-01B). Figure N-6 provides an isoconcentration map of BTEX concentrations in the lower sediment zone. BTEX concentrations in the sediment at this depth interval decrease immediately inside and outside the sheetpile dam. Based on the BTEX concentrations for Y9-PKC-SED-01B and Y9-PKC-SED-06B, the northern half of the canal appears to display BTEX concentrations greater than 100 ppm. The BTEX and TPH concentration distribution in the sediment displays a good correlation.

SVOC were detected in five out of the six sediment core samples collected from the lower sediment zone, with total SVOC concentrations ranging from 41.52 ppm (Y9-PKC-SED-15B) to 514.8 ppm (Y9-PKC-SED-01B). PAH compounds made up a significant portion (39% to 57%) of the SVOCs detected in samples from the lower sediment zone, with PAH



concentrations ranging from 20.68 ppm (Y9-PKC-SED-15B) to 238.9 ppm (Y9-PKC-SED-06B). The SVOC and PAH concentrations in the lower sediment zone have been plotted and contoured on Figure N-7 and Figure N-8, respectively. The highest SVOC and PAH concentrations in the lower sediment zone occur in the northern half of the Platty Kill Canal. The PAH concentration gradient decreases steeply towards the mouth of the Platty Kill Canal. The concentration distribution of SVOC and the PAH in the lower sediment zone display a good correlation with the TPH results.

Lead, zinc, and arsenic concentrations were the highest among the detected metals in the lower sediment zone. Sediment core sample Y9-PKC-SED-01B displayed the highest concentrations of lead and arsenic, at 1300 ppm and 145 ppm, respectively. The highest zinc concentration in the lower zone was detected in sediment core sample Y9-PKC-SED-08B. The concentration of metals in the lower sediment zone outside of the sheetpile dam were generally lower than those on the inside of the dam.

4.6.3.3 Comparison of the Upper and Lower Sediment Zones

The TPH concentrations of the upper and lower sediment zones were evaluated to determine the presence or absence of a vertical contamination gradient.

TPH concentrations in the upper sediment zone appear to display some "hot spots", whereas the lower sediment zone TPH concentrations are more gradational. In the northern reaches of the Platty Kill Canal, TPH concentrations in the sediment of the upper zone are higher along the western side (Y9-PKC-SED-01 and Y9-PKC-SED-03) than the eastern side (Y9-PKC-SED-02 and Y9-PKC-SED-04). In the lower zone, the TPH concentration distribution is the inverse to the upper, with the eastern side displaying higher TPH concentrations than the western side. The upper zone distribution suggests a TPH source is impacting the sediment on the western side. The lower zone distribution suggests that the eastern side contamination is attributed to an historical source.

The distribution of elevated TPH concentrations in the lower sediment zone is a really extensive; nearly three quarters of the canal displays TPH concentrations greater than 10,000 ppm. In contrast, the upper zone displays elevated TPH concentrations (greater than 10,000 ppm) in approximately one third of the canal. This occurrence is further accentuated downstream in the area outside the sheetpile dam (south). TPH concentrations displayed in the upper sediment zone, less than 100 ppm typically, are one order of magnitude lower than that of upper sediment zone, less than 1000 ppm.



The distribution of BTEX in the sediments of the upper and lower zones is similar to that of the TPH concentrations. The upper zone displays BTEX "hot spots" in the northern reaches of the canal, whereas the lower zone displays a BTEX concentration gradient that decreases to the mouth of the canal.

The distribution of SVOC in the sediments of the upper and lower zones contrasts to that of the TPH and BTEX concentrations. The upper zone displays higher concentrations of SVOC in a gradation distribution than that of the lower zone.

The distribution of metals in the sediments of the upper and lower zones do not indicate the existence of any trend or gradient.

4.6.4 NJDEP Soil Cleanup Criteria and Alternate Concentration Limits

The analytical results of the sediment sampling have been compared with the NJDEP Impact to Groundwater Soil Cleanup Criteria (NJAC 7:26D) and the proposed risk-based Alternate Concentration Limits (ACLs) that have been proposed in the Draft Platty Kill Pond Bioremediation Closure Strategy Report.

4.6.4.1 Derivation of Alternative Clean-up Criteria for the Platty Kill Pond

In order to attain the final objective of leaving the Platty Kill Pond sludge in place following completion of the ongoing bioremediation, it must be demonstrated to the NJDEP that the sludge does not present a significant risk to the surrounding environment. The NJDEP has developed interim cleanup guidelines for evaluating soil contamination. These standards specify a cleanup level of 10,000 mg/kg for TPHC, as well as specific cleanup levels for individual volatile, semivolatile, and inorganic compounds. The relative risks of the sludge were inferred by comparing the results from recent sludge and pond water sample analyses to the respective cleanup criteria. The NJDEP cleanup criteria are generic in nature and do not take into account site specific conditions. The NJDEP does allow for the establishment of site specific cleanup levels based on site conditions and the relative risk to both human health and the environment.

Based on the analytical results of sludge samples, ENSR derived alternative, risk-based cleanup levels for the Platty Kill Pond. The cleanup levels were based on the assumption that the sludge in the pond will be left in place, and the only potential for exposure would be during some kind of excavation activity such as repair or maintenance of underground pipeline, sewers or utility lines. It also assumed that there will be no potential exposure via the groundwater route because groundwater in the Bayonne area is not used as a drinking water



source, and that there is no potential exposure to residential populations due to the ponds location on the site, and because access to the site is controlled

The risk-based cleanup levels were calculated in accordance with current U.S. EPA guidance, including Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (U.S. EPA, 1992a) and Guidance on Risk Characterization for Risk Managers and Risk Assessors (U.S. EPA, 1992a). The cleanup levels were based on the standard four-step paradigm determined by the National Research Council (NRC, 1983):

- Hazard Identification;
- Toxicity Assessment;
- Exposure Assessment; and
- Risk Characterization.

The risk-based cleanup levels are presented in Table 4-6. Appendix O provides the documentation of the derivation of the risk-based cleanup levels.

4.6.4.2 Comparison of Results to Clean-up Criteria

The NJDEP Soil Cleanup Criteria for TPH is 10,000 ppm (including all volatile organics). In the upper sediment zone, four out of sixteen sediment samples collected exhibited TPH concentrations above 10,000 ppm, these included samples Y9-PKC-SED-01A, -02A, -03A, and -04A. These are all located in the northern portion of the canal, between the earthen dam at the Platty Kill Pond and the bridge spanning the canal. In the lower sediment zone, six out of the sixteen sediment samples collected exhibited TPH concentrations above 10,000 ppm, these include samples Y9-PKC-SED-01B, -02B, -03B, -04B, -05B, and -06B. These are all located in the northern reaches of the canal, from the earthen dam to a point approximately midway between the bridge that spans the canal and the sheetpile dam at the mouth of the canal. All sediment samples collected from outside the sheetpile dam, both in the upper and lower sediment zones, exhibited TPH concentrations below 4,500 ppm.

Selected sediment cores were submitted for volatile and semi-volatile organic and metals analysis. Two sediment cores (Y9-PKC-SED-01, Y9-PKC-SED-06) displayed volatile organic concentrations which exceeded the NJDEP Soil Cleanup Criteria for benzene (1 ppm), xylenes (10 ppm) and chlorobenzene (1 ppm). All volatile organic concentrations were within one order of magnitude or less of the NJDEP Soil Cleanup Criteria. However, the proposed ACL for benzene (2,820 ppm) was not exceeded by the concentrations observed in these sediment cores. For semi-volatile organic compounds, no sediment concentrations were above the NJDEP Criteria or the proposed ACLs. Concerning the metal detections within the sediment

Table 4-6 Risk-Based Alternative Cleanup Levels Platty Kill Pond Bioremediation Bayonne Industries, Inc. Bayonne New Jersey

Compound	Based on Health Index of 1	Based on Cancer Risk of 1x10 ⁻⁸
Benezene	NC	2.82E+03
1,2-Dichloroethane	NC	1.07E+03
Benzo(a)Anthracene	2.34E+05	1.50E+02
Bis(2-Ethylhexyl)Phthalate	1.56E+05	7.80E+03
Chrysene	2.34E+05	1.50E+04
Indeno(1,2,3-cd)Pyrene	2.34E+05	1.50E+02
Benzo(b)Fluoranthene	3.13E+05	1.50E+02
Benzo(k)Fluoranthene	2,34E+05	1.50E+03
Benzo(a)Pyrene	2.34E+05	1.50E+01
Barium	5.83E+05	NC
Arsenic	2.56E+03	6.83E+02
Copper	3.26E+05	NC

Notes:

NC - not calculated because no dose-responce value was available

Noncarcinogenic cleanup levels based on a health index of 1 and Carcinogenic cleanup levels based on a cancer risk of 1x10⁻⁶ were calculated for each compound. The lower of these two values were used to compare with existing site concentrations.



cores, no criteria values have been developed by the NJDEP. All metal concentrations were below the proposed ACLS for arsenic, barium and copper.

4.7 Performance of Pneumatic Barrier

The pneumatic barrier has proven to be an effective containment barrier to the escape of petroleum sheens and/or any floating trash into the Kill Van Kull. It has also had a positive effect on the general water quality in the vicinity of the Platty Kill Canal mouth.

In general, low turbidity and high secchi disk readings indicated very good water clarity for an estuary, particularly New York harbor waters, and chemical/physical data indicated the water column was well mixed with no well defined salinity or temperature gradient.

As would be expected with the operation of a pneumatic barrier, dissolved oxygen levels were highest close to the barrier and decreased with distance from the barrier. Dissolved oxygen results from samples collected from the control site across the Kill Van Kull were a full 1 mg/L below that found in the near field of the pneumatic barrier. Dissolved oxygen results from the other two control sites were slightly less than those at the barrier.

Biological samples collected using the bottom trawl at the test site and control sites, indicated the largest concentration of fish to be at the test site in close proximity to the pneumatic barrier. Biological samples collected using the gill nets also indicated an obvious preference for the nearfield zone of the pneumatic barrier, and indicated that these fish were most likely feeding in the currents created by the barrier.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Bulkhead Reconstruction and Pneumatic Barrier

The reconstruction of the Platty Kill Canal bulkhead has attenuated the seepage of free-phase product from the canal. Based on the absence of product seepage since the reconstruction, no further reconstruction activity is warranted at this time. To reduce the potential for further free-phase product to emanate from the canal, Bayonne Industries has completed the installation of the subaqueous air dam at the mouth of the canal. This technology is unique because it permits the natural wave and tidal action to pass the air dam while providing a surface barrier for migrating free-phase product.

5.2 Product Curtain

As a result of the installation of the product curtain and the adjacent recovery wells, the freephase product is being attenuated and product recovery has been initiated. No further modification to this structure is warranted at this time.

5.3 Product Recovery Program

Based on the results of the interim remedial activities, ENSR/Bayonne Industries plans to upgrade the interim product recovery program. The program upgrade is expected to be initiated in January 1996 and will consist of the installation of two active skimming pumps into recovery wells Y2-PKB-RW-1 and Y2-PKB-RW-2 to continuously recover free-phase product from along the product curtain. Passive Skimmers will continue to be utilized at monitoring wells MW-4, MW-5, and MW-20.

The active skimming pumps in Y2-PKB-RW-1 and Y2-PKB-RW-2 would be cycled by a timercontrol panel and the free-phase product would be discharged to an above-ground holding tank with automatic shut-off controls. Recovered fluids in the holding tank would be periodically removed and disposed of at an approved facility.

Product accumulation tank measurements recorded by an ENSR technician will be closely monitored. Once the fluid level in the tank has achieved approximately 95% of the storage capacity, the fluids will be removed from the holding tank by a vacuum truck, and properly disposed of, or with NJDEP approval, be blended with existing petroleum product stock.



Future documentation associated with free-phase product recovery will be prepared for submission to the NJDEP on a quarterly basis. The report will include graphs of weekly and cumulative product recovery efforts and serve to document the product recovery progress.

5.4 PKC Sediment

Based on both physical boundaries and analytical results, the Platty Kill Canal can be partitioned into three separate areas. The first area is the northern section that includes the area from the earthen dam at the Platty Kill Pond, south to the bridge that spans the canal. The second area is the mid-section that includes the area from the bridge, south to the sheetpile dam at the mouth of the canal. The third area includes the section outside of the sheetpile dam.

Analytical results from samples collected from outside the sheetpile dam indicate that the TPH concentrations in the upper sediment zone (0 to 4 foot depth interval) are below 1,000 ppm; and the TPH concentrations in the lower sediment zone (below 4 feet) are less than 2,500 ppm. These TPH concentrations are below the NJDEP 10,000 ppm total organic compound including TPH soil cleanup criteria. Analytical results from sediment samples collected from outside of the sheetpile dam and analyzed for TCL volatile and semivolatile organic compounds, and TAL metals indicate that all compounds detected are below their respective NJDEP impact to groundwater, soil clean-up criteria and below the risk-based alternative clean-up levels developed for the Platty Kill Pond. Based on these results Bayonne Industries proposes, No Further Remedial Actions for the sediments outside of the sheetpile dam.

Analytical results of sediment samples collected from the mid-section of the canal indicate that the TPH concentrations in the upper zone are at, or slightly above the 10,000 ppm cleanup criteria; and TPH concentrations in the lower zone exceed the 10,000 ppm criteria in the upper reaches of this section near the bridge. Individual organic compound and metals contaminant concentrations in sediment samples collected from this area, in both the upper and lower sediment zones are below their respective clean-up criteria (for those that have established criteria) and below the ACLs developed for the Platty Kill Pond. International Matex Tank Terminals, the current site operator, has a need to dredge their shipping berths. Since ocean dumping of these dredge spoils is currently banned, IMTT has been exploring potential upland disposal areas for these dredge spoils; therefore, Bayonne Industries proposes to use the mid-section of the Platty Kill Canal as a dredge spoils disposal area. Impervious barriers will be constructed at each end of the section, and the area will be de-watered as the dredge spoils are placed into the canal section. Once filled, the dredge spoils will be capped and the area will be seeded.



Analytical results from samples collected from the northern section of the canal indicate that the TPH concentrations in both the upper and lower sediment zones exceed the 10,000 ppm clean-up criteria as well as the 35,000 ppm NJDEP hazardous waste criteria. Analytical results of sediment samples collected from this section of the canal indicate contaminant concentrations similar to those presently in the Platty Kill Pond. To reduce the TPH and organic compound concentrations in the sediments in the northern section of the canal to below regulatory limits, Bayonne Industries proposes to install and operate a bioremediation system similar to the one currently in use in the Platty Kill Pond. New sheetpile bulkheads will be installed on the sides of the canal and an impermeable barrier will be constructed at the bridge that spans the canal, to prevent the migration of contaminants to the mid-section of the canal.

A Remedial Action Work Plan for the bioremediation of the northern section of the canal and the use of the mid-section of the canal as a dredge spoils disposal area, will be prepared and submitted to NJDEP as a separate document from this IRA Report.



James E. McGreevey
Governor

Department of Environmental Protection

Bradley M. Campbell Commissioner

Bureau of Case Management P.O. Box 028 401 East State Street Trenton, NJ 08625-0028 Telephone: (609) 633-1455 Facsimile: (609) 633-1439

Rusty Walker Director of Environment, Health & Safety International Matex Tank Terminals 321 St. Charles Street New Orleans, LA 70130

MAR 1 4 2003

Dear Mr. Walker:

Re: In the Matter of the Bayonne Industries Site, Cogen Technologies, and Bayonne Industries, Inc.

City of Bayonne, Hudson County, New Jersey Contaminated Site List No. NJD064288855

Memorandum of Agreement (MOA) dated 27 May 1992

Remediation Agreement (RA) dated 22 January 1999 - ISRA Case # 98513

Platty Kill Canal (PKC) - Remedial Investigation Report (RIR) Addendum dated 28 August 2001 &

Technical Modification to Hot Spot Delineation dated 26 September 2001

The New Jersey Department of Environmental Protection (Department or NJDEP) has completed its review of the referenced documents and determined that they are conditionally acceptable. Prior to enumerating the conditions that shall apply to the Department's approval of these documents, the NJDEP reiterates that Bayonne Industries, Inc. (BI) and ExxonMobil (EM) are jointly and severally responsible for the contamination in the PKC, which lies on the border of both properties. BI and EM have agreed to conduct the PKC remediation in a cooperative manner with NJDEP oversight being primarily directed to BI. As part of the proposed PKC remedial action, sediment contaminated with high concentrations of polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and inorganic analytes will be excavated. Originally, BI and EM proposed to place the excavated sediment into the adjacent Platty Kill Pond (PKP) and stabilize the material as part of the remedial action for PKP. However, BI recently informed the NJDEP that the contaminated "hot spot" sediment from the PKC would not be placed into the PKP. Therefore, an acceptable treatment or disposal method shall be selected/proposed for the contaminated "hot spot" sediment that shall still be excavated from the PKC.

Remedial Investigation Report (RIR) Addendum

Based upon its review, the Department has determined that the data do not fully support the conclusions presented in the RIR Addendum. However, the NJDEP recognizes that the conclusions are preliminary and that further investigation is proposed. Therefore, the RIR Addendum is conditionally acceptable for pre-design investigative purposes provided that the following comments are addressed to Department's satisfaction. Since the selected remedy relies largely on containment of the contamination present in the PKC sediment, the comments pertain mainly to the presence, integrity, thickness, and/or continuity of the clay layer that is intended to serve as the bottom/floor of the containment system.

3. Thickness of Confining Unit

Determining the thickness and permeability of the clay beneath the PKC is a critical component of the selected remedy. The ability to implement a containment strategy will be compromised by the absence of a continuous layer of a thick, impermeable confining unit beneath the PKC. Based on available information, the NJDEP's requirements and the recommendations of the sheet pile engineer (see next paragraph) may not be met.

As stated in the 3 January 2001 letter from Dr. Weaver, the sheet pile engineer recommended that a clay thickness of 5 feet would be needed to provide an adequate seal around the sheet pile and maintain an adequate thickness of clay below the sheet pile. In addition, the RIR Addendum concludes that the results of field observations and the laboratory permeability analyses have demonstrated that the clay and clay-till together would form an impermeable barrier that would be effective in retarding the vertical migration of contaminants. The recommendation provided by the sheet pile engineer seems reasonable, but the NJDEP does not concur with the cited conclusion.

Review of the logs for the "land-side" borings (Appendix A) indicate that clay thickness ranges from 0.0 feet (DSB-11) to 8.5 feet (DSB-9). Less than 5 feet of clay was encountered in borings DSB-1 (0.5 ft), DSB-2 (1 ft), DSB-4 (1.5 ft), DSB-7 (3 ft), DSB-8 (4 ft), DSB-10 (2 ft) and DSB-11 (0.0 ft). All of the laboratory permeability tests that yielded data in the 10⁻⁷ cm/sec range were performed on samples from intervals logged as clay in land-side borings and Vibrocore borings. However, the permeability tests performed on the till yielded data in the 10⁻³ to 10⁻⁶ cm/sec ranges. A permeability of 1x10⁻⁷ cm/sec is considered impermeable by NJDEP (see N.J.A.C. 7:26E-1.8), and the same permeability seems to have been recommended by the sheet pile installation engineer (per the 1/3/01 email attachment). Therefore, the NJDEP does not agree that the till is equivalent to the clay for the purpose of containing the contaminants in the PKC. Further investigation of this matter is needed.

4. Composition of the Till

Based on the preceding comment and the suggestion that the clay and till together should provide a sufficiently thick impermeable floor to the containment structure, the composition of the till is an important factor in site characterization. Unfortunately, the variability in composition of the till is not adequately evaluated/discussed in the RIR Addendum.

March 2000 Vibrocore Program, Section 4.1

This section states that the till material at the southern end of the PKC was found to have a higher gravel content than the till under the PKP and the northern part of the PKC. In fact, grain size analyses on samples from four of eight Vibrocore borings performed at the southern end of the PKC demonstrated that three of the four samples tested (VIB-3, VIB-4 and VIB-8) consisted of a higher percentage of sand and gravel than silt and clay. The sample from VIB-3 contained 78.9% sand and gravel, including 44.4% gravel and is described in the laboratory report as a silty clayey gravel with sand. The sample from VIB-4 contained 60.4% sand and gravel, including 26.6% gravel and is described as a clayey sand with gravel. The sample from VIB-8 contained 63.0% sand and gravel, including 20.6% gravel and is described as a silty sand with gravel.

The Department notes that Figure 2 depicts clay as being present at locations where it was not encountered and/or as being thicker than what is reported on the corresponding logs. For example:

- Approximately 5 feet of clay is depicted in VIB-01. However, the log in Appendix B notes 0.5 feet of soft dark gray clay with roots (probably meadow mat, but called gray clay on Fig.2), underlain by 0.5 feet of till consisting of gravel and clay. This layer is reportedly underlain by till consisting of silty sand.
- Approximately 5 feet of clay is depicted in the VIB-50-series boring locations and is projected
 from the VIB-50 locations from a point to the north of the VIB-50 location south all the way to
 the VIB-49 location. However, clay was not encountered in the VIB-50 borings and its extent
 north of the VIB-49 borings has not yet been determined.
- Approximately 4 feet of clay is depicted in the DSB-1 boring location. Only 0.5 feet of silty clay
 (25-25.5 feet) was reported in this boring, underlain by 1.5 feet of silt and clay till with some
 gravel. The log then reports silty sand down to 39 feet. Silt and clay till with some gravel is
 again reported from 39-41 feet bgs with no recovery from 41-43 feet, followed by silty sand to 45
 feet (the bottom of the boring).
- Only 1 foot of clay was reported in boring DSB-2, but about 2.5 feet is depicted on Figure 2.
- Only 1.5 feet of clay was reported in boring DSB-4, but about 2.5 ft. is depicted on Figure 2.

These discrepancies and any/all other inaccuracies shall be corrected and revised figures shall be presented to depict the correct information as well as the differences in soil type present in the till as shown on logs and cross sections.

6. Composition of Clay, Section 4.3

This section discusses the January 2001 boring program. It states that the clay in the southern part of the PKC is mixed with gravel and is thought to be a clay-till or an erosional lacustrine clay mixed with till where the original Platty Kill Creek drained into the Kill Van Kull. The data from borings DSB-3 and DSB-5 (located next to this part of the PKC) do not support this statement because the logs show 4 feet and 5 feet of clay (without gravel), respectively. Figures 2 and 4 accurately depict the information and correspond with the logs. All of the logs of borings adjacent to the southern part of the PKC except DSB-11 report some clay without gravel. In contrast, the log of boring DSB-10 reports silt with some clay and little gravel in the top two feet of the clay, and silt and clay with little sand and a trace of gravel in the bottom 2 feet of this 4-foot interval. This is the only land-side boring where gravel is reported in the interval depicted as clay. This section of the text does not mention that some of the till encountered in the land-side borings consists of silty sand. Since the logs and figures seem to somewhat contradict the text, a better explanation of the interpretation of the stratigraphy in this area must be provided and be based on the information in the boring logs.

7. Unstable Area

An explanation is needed for the notation "unstable area" along the east bank of the PKP south of boring DSB-2/2R, and of any significance the instability in this area may have for the selected remedial action.

c: James Monkowski, Bayonne Health Department George Bress, Bayonne Industries, Inc. Ronald E. Scerbo, ExxonMobil Andrew Cozzi, Bluestone Environmental Services Mary Hrenda, BGWPA John Boyer, BEERA

New Jersey Department of Environmental Protection Site Remediation Program Division of Publicly Funded Site Remediation Bureau of Ground Water Pollution Abatement

MEMORANDUM

To:

Mike Kenney, Case Manager

BCM, DRPSR

CM, DIG SK

From:

Mary Hrenda, Geologist

BGWPA, DPFSR

Subject: Remedial Investigation Addendum Report (RIR Addendum)

Aug. 22, 2001

and

Hot Spot Delineation

Sept. 26, 2001

Bayonne Industries, Inc.

Bayonne, Hudson County

Job #/PAC Code: J010N4A0/V29H

In response to your 10/16/01 referral, BGWPA has completed a technical review of the subject documents (the RIR Addendum and the Delineation Report). BGWPA does not believe that the conclusions of the RIR Addendum are necessarily supported by the data. However, the conclusions are preliminary, because further investigation is proposed. Therefore, BGWPA finds RIR Addendum to be conditionally acceptable as part of an ongoing investigation, provided that that BI addresses the comments below to NJDEP's satisfaction. Review of the RIW Addendum raises some concerns regarding the sludges/sediments outside the areas designated "hot spots". These sludges/sediments include areas in which the impact to ground water soil cleanup criteria (IGWSCC) are exceeded. Further explanation is provided in the comments below. Otherwise, comment on the Hot Spot Delineation is mainly deferred to BEERA.

A. Site Background:

The 200-acre Bayonne Industries (B1) site (the site) has been the location of industrial activity relating to the production and distribution of petroleum products since the 1870's. Beginning in the 1870's the site was occupied by a large refinery operated by the Tidewater Oil Co. In 1956, the site was sold to Bayonne Industries, Inc., which operated it as a bulk liquid storage and distribution terminal. The present owner, IMTT, purchased the site in 1983 and continues to operate it as a storage and distribution terminal for petroleum products, such as gasoline, lubricating and heating oil, plasticizers and "other chemicals". The site has been found to be contaminated with free product and chromium slag in investigations carried out to date. The site is located directly to the west of the Exxon Bayonne site, another former refinery, now primarily a petroleum storage, blending, packaging and distribution facility. The Exxon Bayonne site is also contaminated with free petroleum product and chromium slag. Much of the Exxon Bayonne site now belongs to IMTT/BI. ExxonMobil (EM) is responsible for the remediation of the Exxon Bayonne site and retains a portion of that site. The Platty Kill Canal (the PKC) is a short (approx. 1,000 ft. long) waterway formerly used as a barge canal that forms part of the border between the southern portions of the eastern side of the Bayonne Industries site and the western side of the former Exxon Bayonne site. The PKC discharges to the Kill Van Kull waterway (the KVK). The northern (northwest-southeast-running) portion of the present PKC is a remnant of the original Platty Kill Creek. Much of the original creek was filled in, along with part of the Kill Van Kull, during the development of the sites as refineries. The lower (northsouth running) end of the present PKC was left unfilled and possibly also dredged out to form part of the barge canal, along with the still-existing portion of the original creek. For many years, BI used the farthest upstream end of the PKC, which is within the borders of the BI site, as an oil/water separator. This area,

called the Platty Kill Pond (the pond), is now separated from the PKC by an earthen dam with a clay/synthetic liner. Petroleum sludge is present in the bottoms of both the pond and the PKC, and petroleum sheens are present on the surface of the water in both. BI alone is responsible for the remediation of the pond, which is completely within the borders of the BI site. The subject RIR Addendum pertains to the PKC only, and not the pond, for which a separate Remedial Action Selection Report (RASR) has been developed. BI and EM are jointly and severally responsible for the remediation of the PKC. BI is the lead contact with NJDEP, by agreement between BI and EM.

In 1991, a sheet pile dam was installed across he mouth of the PKC, which restricts sediment migration from the PKC into the KVK. In the summer of 1993, the Coast Guard directed that measures be implemented to curtail the discharge of free-phase product from the PKC into the KVK. In response, BI implemented interim remedial actions (IRAs) including: reconstruction of a portion of the bulkhead, installation of a subsurface barrier to free-product migration along the KVK shoreline, installation of an Air GuardTM containment system to prevent migration of free product sheen from BI's side of the PKC into the KVK, and initiation of an investigation to characterize the sediments in the PKC. BI's 9/26/01 Technical Modifications to the Platty Kill Canal, Hot Spot Delineation, one of the subject documents (see below), is BI's latest submission on the characterization/delineation of impacted sediments in the PKC. In response to NJDEP's Nov. 24, and Dec. 16, 1999 letters, BI and EM submitted a joint Remedial Action Selection Report (RASR) to NJDEP for the PKC on Feb. 18, 2000. NJDEP conditionally approved the RASR in its July 13, 2000 letter to BI. The conditional approval letter identified significant data gaps that must be filled in order to determine whether or not the proposed remedy is actually feasible. The subject RI Addendum reports on BI's progress toward filling these data gaps.

B. Proposed Remedial Action: The proposed remediation consists of containment of contaminated sludges along with the establishment of engineering and institutional controls for the area of concern (AOC), along with the removal and/or solidification of "hot spots". BI and EM propose to fill the PKC with dredge spoil from BI's West Side piers. BI also proposes to hydraulically isolate the PKC from shallow ground water and associated contamination and from the KVK by installing vinyl sheet pile around the perimeter of the PKC. Before beginning to fill the PKC, a new, stronger, anchored sheet pile bulkhead is proposed to be installed just inside the existing sheet pile bulkhead near the mouth of the PKC. The actual location and bottom depth of the sheet pile bulkhead have not been determined. The plan states that free product will be remediated and recovered as practicable as part of site preparation, in accordance with specific plans to be included in the RAW. In addition, obstructions such as pipes, boulders, debris, collapsed bulkheads, etc. will have to be removed prior to installing vinyl sheet pile around the remaining three sides of the PKC. Hot spots in the PKC will be removed and properly disposed and/or treated prior to filling by stabilization or incorporation into the pond and stabilization along with the sludges in the pond. The PKC is then proposed to be filled with dredge spoil from BI's West Side piers. The vinyl sheet pile is proposed to be keyed into a red-brown glacial silt/clay layer that had been encountered in some earlier borings in the pond and on the Exxon side of the PKC to complete an impermeable containment. The RASR for the PKP stated that this glacial clay was present beneath the PKP at a thickness of 15 ft. However, no data were presented in the RASR to demonstrate that the clay was present at this thickness continuously beneath the bottom of the entire PKC. BI and EM have yet to verify the presence of this glacial silt/clay beneath the entire PKC, as well as its thickness. An inward hydraulic gradient will be maintained by pumping water from the sediments within the sheet pile. The design will include free product recovery from this pumped water. The proposed cap will include a 60 mil HDPE geomembrane installed over a bedding layer on top of the dredge spoil, with a drainage sand layer on top of the HDPE liner and a vegetated soil cover on top. The vegetated cover will be planted with species that will effectively minimize erosion and have roots that will not penetrate below the drainage sand layer. The final cap will be sloped towards the outside of the sheet pile bulkheads on the sides of the PKC, and surface runoff is proposed to be captured and directed towards the site stormwater drainage system. The existing steel sheet pile dam (outside of the new steel sheet pile dam) is to be removed.

C. Description of 2001 RI Addendum: One of the stipulations of NJDEP's conditional approval of the RASR for the PKC was that BI must demonstrate the presence of a continuous clay layer beneath the proposed containment area with thickness and impermeability characteristics sufficient to satisfy the remedial objectives of the project. NJDEP did not specify a numerical minimum thickness of the clay.

This was because of the engineering considerations involved in keying the bottom of the sheet pile into the clay. There must be a sufficient thickness of the clay present to form an impermeable seal around the bottom of the sheet pile, as well as to form an impermeable base for the proposed containment cell. In a Jan. 3, 2001 letter attached to an email to the NJDEP case manager for BI, BI stated that their sheet pile installation engineering consultant reported that a minimum clay thickness of five ft, would be enough to ensure an adequate seal between the sheet pile and the clay and provide an impermeable base to the containment cell at a permeability of 10⁻⁷ cm/sec. One of the objectives of the RI Addendum was to verify the presence of a continuous clay layer of sufficient thickness and impermeability beneath the PKC to isolate the contaminants in the proposed containment structure. Another objective of the RI Addendum was to determine the areas in which obstructions to the installation of sheet pile exist along the sides of the PKC. To determine the locations of obstructions to the installation of sheet pile along the sides of the PKC and to determine the thickness and extent of the clay in the PKC, 76 Vibrocore borings were performed in 38 locations, mostly along the sides, but also in the middle of the canal. Due to the limited penetration capabilities of the Vibrocore drilling method at this site and the desire not to fully penetrate the floor of the proposed containment structure, eleven soil borings were performed on land along both sides of the PKC to determine the thickness of the clay layer. BI requested that the total depth of these borings be limited to 45 ft. NJDEP agreed to this, as long as the borings demonstrated that a sufficiently thick clay layer was present to meet the project objectives. From previous soil boring logs from the site (e.g., Weston 1979), it was believed that the clay was a clay-till with little to no gravel in the top few feet and fine to coarse gravel in deeper portions. BI states that they found a geologic contact in the northern portion of the PKC, where a clay overlies a glacial till. Based on that information, they are considering the clay and the till to be separate geologic units. Please see Comment 4, below, for further discussion of the glacial till.

Permeability testing of the clay and till was performed by three different methods. Laboratory falling head permeability testing was performed on undisturbed samples from four shelby tube samples of the clay from the soil borings performed on land and three selected Vibrocore samples. Laboratory falling head tests were performed on two reconstituted samples of the till. Field falling head permeability testing was performed on the till in three land soil borings.

Comments

D. RIR Addendum:

1. Confirmation of the Presence of the Clay Below the Bottom of the PKC: BGWPA disagrees with the statement in Conclusion 1 on p. 14 that describes the area in the bottom of the PKC where the presence of clay has not been confirmed. This area was defined by BI as an area approximately 300 ft. long on the EM side, between Vibrocore borings VIB-16 and VIB-11, and approximately 100 ft. long in the BI side, between Vibrocore borings VIB-37 and VIB-39. This area is shown in blue on Fig. 4. Logs of Vibrocore borings in Appendix B indicate that no clay was encountered in a number of borings in the middle of the PKC and on the BI side both to the north and south of the area depicted by BI. To the north, away from the EM side, no clay was encountered in VIB-51-1 or VIB-51-10 through 13, VIB-36-1 through 5 and VIB-37-1 and 2. BGWPA notes that clay was encountered in boring VIB-36-6 in this area, but not in any of the above-named borings in the surrounding area. BGWPA also notes that BI indicates on Fig. 3 that obstructions may be present in the bottom of the PKC in the area of borings VIB-36-1 through 5 and VIB-51-10 through 12, which may have stopped the progress of these borings before they reached the clay. Whatever the circumstances, however, it is still the case that the Vibrocore boring program failed to demonstrate the presence of the clay beneath this area of the PKC. BI must demonstrate that the clay is present in this area at a sufficient thickness, if they intend to use this part of the PKC as part of the proposed containment structure. To the south of the area in which BI states that the clay was not encountered in Vibrocore borings in the PKC, the Vibrocore boring logs in Appendix B indicate that clay was not encountered in borings VIB-40-1, VIB-40-4, VIB-41-1 and 2, and VIB-42-1 and 2. BI indicates that obstructions in the PKC stopped the progress of these borings before they could encounter the clay. However, since there is, as a result, no evidence for the presence of the clay beneath the bottom of the PKC in this area, BI must also confirm the presence and thickness of the clay here. Based on the evidence in the Vibrocore boring logs in Appendix B, the area in which the presence of clay beneath the bottom of the PKC must be confirmed has the same length on the EM side as the area described by B1 in the R1

Addendum. However, on the BI side, it extends approximately 300+ ft. between VIB-36-1 through 4 and VIB-42. In addition, since the VIB-50 boring location, where no clay was encountered, and VIB-49 location, where clay was encountered, are approximately 160 ft. apart, the extent/continuity of the clay should be better defined in this area. The proposal in Recommendation 1 in Section 6.0 shall be modified to confirm the presence of the clay beneath the PKC in this larger area.

- 2. Soil Sampling Procedure, Recommendation 1 in Section 6.0, and Lack of NJDEP Approval for QAPP: BI states in the second paragraph under Recommendation 1 in Section 6.0 that BI's "Remedial Investigation Addendum for Sampling Clay-Till", dated Aug. 2000 will be followed in the above proposed investigation. BI is referred to NJDEP's Nov. 15, 2000 comment letter on the Aug. 2000 RI Addendum. BI also states that they will be using the "Conventional Drilling Soil Sampling Procedure" in BI's March 1999 QAPP. Please note that BI's March 1999 QAPP has not been approved by NJDEP. BI is referred to Comment 6 on p. 4 of 5 in NJDEP's June 10, 1999 comment letter to BI on its March 1999 Free Product Investigation Workplan (FPIW). NJDEP did not perform a formal review of the OAPP at the time it was submitted, because the above FPIW, with which the QAPP was submitted, did not include any proposals for sampling by any of the methods covered in the QAPP. Since the QAPP was not reviewed by NJDEP, it was excluded from the conditional approval of the FPIW. BI was directed in the above-referenced comment in NJDEP's 6/10/99 letter to re-submit to NJDEP a QAPP that conforms to the minimum requirements established by the TRSR at such time as the sampling methods included in the QAPP were proposed for use in the free product delineation investigation. Since BI is now referencing the unapproved 1999 QAPP for the PKC pre-design investigation, BI must submit a QAPP that covers, at a minimum, all the field and laboratory procedures proposed to be used in the additional pre-design investigation at the PKC to NJDEP for review.
- 3. Thickness of Confining Unit (Bottom of Proposed Containment Cell): As stated above, BI told NJDEP in a 1/3/01 email attachment that its sheet pile installation engineer had informed BI that a clay thickness of 5 ft. would be needed to provide an adequate seal around the bottom of the sheet pile and have an adequate clay thickness below the bottom of the sheet pile. The logs of the borings performed on land in Appendix A indicate that clay thicknesses ranging from 0.0 ft. (DSB-11) to 8.5 ft. (DSB-9) were encountered in these borings. Less than 5 ft. of clay was encountered in borings DSB-1 (0.5 ft.), DSB-2 (1 ft.), DSB-4 (1.5 ft.), DSB-7 (3 ft.), DSB-8 (4 ft.), DSB-10 (2 ft.) and DSB-11 (0.0 ft.). All of the laboratory permeability tests yielding permeabilities in the 10-7 cm/sec range were performed on samples from intervals logged as clay in land borings and Vibrocore borings. Conclusion 5 in Section 5.5 states that the results of field observations and the laboratory permeability analyses have demonstrated that the clay and clay-till together would form an impermeable barrier that would be effective in retarding the vertical migration of contaminants. However, permeability tests performed on the till yielded permeabilities in the 10⁻³ to 10⁻⁶ cm/sec ranges. A permeability of 10⁻⁷ cm/sec is considered impermeable by NJDEP (see N.J.A.C. 7:26E-1.8), and the same permeability seems to have been recommended by BI's sheet pile installation engineer per BI's 1/3/01 email attachment. So, BGWPA does not believe that BI has demonstrated that the till is necessarily equivalent to the clay for the purpose of containing the contaminants in the PKC. Further investigation of this matter is needed.
- 4. Composition of the Till: Since it is proposed that the clay and till together should provide a sufficiently thick impermeable floor to the containment structure, the composition of the till is an important factor in site characterization. BGWPA believes that the variability in composition of the till was somewhat glossed over in the report.
- a. March 2000 Vibrocore Program, Section 4.1: BI states in this section that the till material at the southern end of the PKC was found to have a higher gravel content than the till under the pond and the northern part of the PKC. In fact, grain size analyses on samples from four of eight Vibrocore borings performed at the southern end of the PKC in March 2000 demonstrated that three of the four samples tested (VIB-3, VIB-4 and VIB-8) consisted of a higher percentage of sand and gravel than silt and clay. The sample from VIB-3 contained 78.9% sand and gravel, including 44.4% gravel and is described in the laboratory report as a silty clayey gravel with sand. The sample from VIB-4 contained 60.4% sand and gravel, including 26.6% gravel and is described as a clayey sand with gravel. The sample from VIB-8 contained 63.0% sand and gravel, including 20.6% gravel and is described as a silty sand with gravel. The

four samples sent to the lab for testing in March 2000 could not be tested for permeability, because they fell apart while being trimmed for permeability testing. BI provided NJDEP with the test results on these samples together with a cover letter from the lab. The cover letter expressed an opinion, not based on testing, but on the experience of the analyst, that the samples might have a permeability of 10⁻⁸ to 10⁻⁸ cm/sec. However, BGWPA remains concerned that the clay and till with a significant sand and gravel content may not form an effective seal with the bottom of the sheet pile. This is especially of concern in areas in which no clay or less than 5 ft. of clay is present. BI shall respond to this concern.

- b. Besides the presence or absence of clay in borings and the higher gravel content of the till in the southern portion of the PKC, the variability in the composition of the till is not addressed. The till is variously referred to as a clay-till and a gravel-clay till. However, its composition is more variable, as demonstrated by the logs in Appendix A. For example:
- The bottom foot of boring DSB-6 and the bottom two ft. of boring DSB-2 are described as till
 consisting of silty sand with little or some gravel.
- The interval above the silty sand in boring DSB-2, from 29-33 ft. bgs, is described as silt with little clay and little fine to coarse gravel.
- The till in the top three feet of the till interval in DSB-11, in which it is reported that no clay was
 encountered, is logged as silt with some gravel and a trace of clay.
- More silty sand than silty clay or silt and clay till is reported in the log of DSB-01 in the depth interval
 in which the till is found in other borings. In this boring, the reddish brown silty sand was not logged
 as till, as it was in the other boring logs.

BI shall discuss the variability in the composition of the till, the significance it has to the successful implementation of the proposed remedy.

- 5. Depiction of the Till Fig. 4, Clay-Till Thickness and Delineation Map with Historic Shoreline Overlay, and Fig. 2. Generalized Cross Sections Platty Kill Canal: On both of these figures, the till is depicted with the same symbol, no matter what its composition. Since the till has been found to have a variable composition, ranging from clay through silt to silty sand, all with varying amounts of gravel, it would have been more useful to depict these compositional differences on the graphic logs on Fig. 4 and the cross-sections on Fig. 2. This is particularly true since one of the main purposes of the investigation is to determine the horizontal and vertical extent of the geologic material beneath the PKC that would be capable of providing a containment cell for the contaminated sludges/sediments in the PKC. BGWPA notes that clay is depicted on Fig. 2 in locations where it was not encountered and/or at a greater thickness than that documented in the logs. For example:
- Approximately 5 ft. of clay is depicted in boring Vibrocore boring VIB-01. However, the log in Appendix B notes 0.5 ft. of soft dark gray clay with roots (probably meadow mat – called grey clay on Fig.2), underlain by 0.5 ft. of till consisting of gravel and clay. This is reportedly underlain by till consisting of silty sand.
- Approximately 5 ft. of clay is depicted in the VIB-50-series boring locations and is projected from the VIB-50 locations from a point to the north of the VIB-50 location south all the way to the VIB-49 location. Clay was not encountered in the VIB-50 borings, and its extent north of the VIB-49 borings has not yet been determined.
- Approximately 4 ft. of clay is depicted in the DSB-1 boring location. Only 0.5 ft. of silty clay (25-25.5 ft.) was reported in this boring, underlain by 1.5 ft. of silt and clay till with some gravel. The log then reports silty sand down to 39 ft. Silt and clay till with some gravel is again reported from 39-41 ft. bgs., with no recovery from 41-43 ft., followed by silty sand to 45 ft. (the bottom of the boring).
- Only 1 ft, of clay was reported in boring DSB-2, but about 2.5 ft. is depicted on Fig. 2.
- Only 1.5 ft. of clay was reported in boring DSB-4, but about 2.5 ft. is depicted on Fig. 2.

BI shall correct the discrepancies noted above and depict the differences in soil type present in the till on logs and cross sections.

- 6. Composition of Clay, Section 4.3: In the fifth paragraph of Section 4.3 (January 2001 Delineation Soil Boring Program), BI states that, in the southern section of the PKC, the clay is mixed with gravel and is thought to be a clay-till or an erosional lacustrine clay mixed with till where the original Platty Kill Creek drained into the KVK. BGWPA notes that, in contradiction to this, borings DSB-3 and DSB-5, which are located alongside this part of the PKC, are logged as having 4 ft. and 5 ft. of clay (without gravel), respectively, and are depicted this way on Figs. 2 and 4. All of the logs of borings adjacent to the southern part of the PKC except DSB-11 report some clay without gravel. In contrast to this, the log of boring DSB-10, beside the northern portion of the KVK, reports silt with some clay and little gravel in the top two ft. of the interval depicted as clay on the figures and silt and clay with little sand and a trace of gravel in the bottom 2 ft. of this 4-ft. interval. This is the only on-land boring in which gravel is reported in the interval depicted as clay. This section of the text does not mention that some of the till encountered in the on-land borings consisted of silty sand. Since the logs and figures seem to somewhat contradict the text, BI should provide a better explanation of their interpretation of the stratigraphy in this area and relate it to the information in the boring logs.
- 7. An explanation is needed for the notation "unstable area" along the east bank of the PKP south of boring DSB-2/2R, and of any significance the instability in this area may have for the proposed remedial action.
- E. Hot Spot Delineation: Hot Spot 4, which corresponds to the location of sediment sample Y9-PKC-SED-17B, is located near the southern end of the area in which the presence of clay beneath the PKC has been confirmed. Removal and/or treatment of contaminated sediments in "hot spots" is proposed as part of the remedial action. However, sediments in areas not determined to be "hot spots" include sediments that exceed the IGWSCC and 10,000 ppm TPH, and have elevated concentrations of arsenic and lead. The RASR proposes to leave these sediments in place and encapsulate them in the proposed containment structure. This is acceptable, if it can be demonstrated that there is a sufficiently impermeable "floor" to the containment structure beneath them, and that an impermeable seal can be formed between the "floor" and "walls" of the containment structure in the areas where the exceedances occur. Exceedances of the impact to ground water soil cleanup criteria (IGWSCC) for total xylenes, naphthalene, 2methylnaphthalene and phenanthrene were detected in other sediment samples in the area in which the presence of clay was not confirmed (i.e., Y9-PKC-SED-19, 21 and possibly 23) (see the March 25, 1998 PKC Phase II Sediment Investigation Report). Total petroleum hydrocarbons (TPH) concentrations exceeding 10,000 ppm were detected in the above samples plus Y9-PKC-SED-05A and B, 06B and 20A, B and C. If containment of the contaminated sediments/sludges in this area is found to be infeasible, BI will have to recommend another, feasible remedial method for this part of the PKC. Further comment on this document is deferred to BEERA.

If you have any questions or require any further information, please do not hesitate to contact me at 292-9904.

C: E, Fernandez, BGWPA G. Czock, BGWPA J. Boyer, BEERA

6572



State of New Jersey

Christine Todd Whitman Governor Department of Environmental Protection

Robert C. Shinn, Jr. Communicationer

EIVE

MEMORANDUM

TO:

MIKE KENNEY, CASE MANAGER, BCM

FROM:

JOHN E. BOYER, TECHNICAL COORDINATOR, BEERA/EES

SUBJECT:

REVIEW OF REVISED "HOT SPOT" DEFINITION (11 APRIL 2001)

BAYONNE INDUSTRIES SITE BAYONNE, HUDSON COUNTY JC: J010N4A0 AC: V98M

DATE:

4 MAY 2001

As requested in your referral of 18 April 2001, a technical review has been completed on the aforementioned document prepared by Bluestone Environmental Services for the Bayonne Industries sites. BEERA previously commented (J. Boyer to M. Kenney, dated 20 February 2001) on the definition of sediment "hot spots" in the Platty Kill Creek. The definition has been modified to reflect BEERA's technical issues.

Bayonne Industries and ExxonMobil have agreed to cooperate in the remediation of the Platty Kill Canal (PKC). The PKC lies on the border between their respective properties. As part of the proposed remediation action, sediments contaminated with high concentrations of PAHs, volatile organic compounds and inorganic analytes will be excavated and incorporated into the Platty Kill Pond remediation project. The "hot spot" definition is BI proposal to designate the limits of contaminated sediments in the Platty Kill Creek subject to excavation and remediation.

Previously, BEERA noted that the proposal failed to evaluate high concentrations of inorganic analytes within the "hot spot" definition. Bluestone has assessed the elevated lead and arsenic concentrations, using the Non-Residential Direct Contact Soil Cleanup Criteria as the appropriate standard for metals.

The revised "hot spot" definition and proposed limits of excavation reflect the incorporation of elevated arsenic and lead contamination in sediments. However, the volume of sediments to be removed from the Platty Kill Creek has changed from 7,350 cubic yards to 6,760 cubic yards in the new proposal. Bayonne Industries shall justify the 10 % reduction in the volume of contaminated sediments that will be transferred to the Platty Kill Pond for treatment.

Pending resolution of the "volume" issue, the proposed "hot spot" definition is acceptable to BEERA. As stated in our prior memo, this "hot spot" definition is site-specific, based on the particular circumstances of the Platty Kill Creek and Pond.

Please feel free to contact me should you have any questions. I can be reached at **a** (609) 984-9751 or **b** iboyer@dep.state.nj.us. Thank you.

JEB

My documents\word97\bayonne industrieshot spot definition-revised.401.doc\5.4.01

cc: Kevin Schick, Section Chief, BEERA/EES
Mary Hrenda, Geologist, BGWPA
Mark Walters, Case Manager, BCM

New Jersey Department of Environmental Protection Site Remediation Program Division of Publicly Funded Site Remediation Bureau of Ground Water Pollution Abatement

MEMORANDUM

To: Mike Kenney, Case Manager
BCM, DRPSR

Mary Hrenda, Geologist
BGWPA, DPFSR

Subject: Remedial Investigation (RI) for Sampling Clay-Till
Platty Kill Canal (PKC)
Bayonne Industries (BI)
Bayonne, Hudson County

BGWPA has completed a technical review of the subject document and has found it to be conditionally acceptable, provided that the comments below are addressed.

Aug. 30 2000

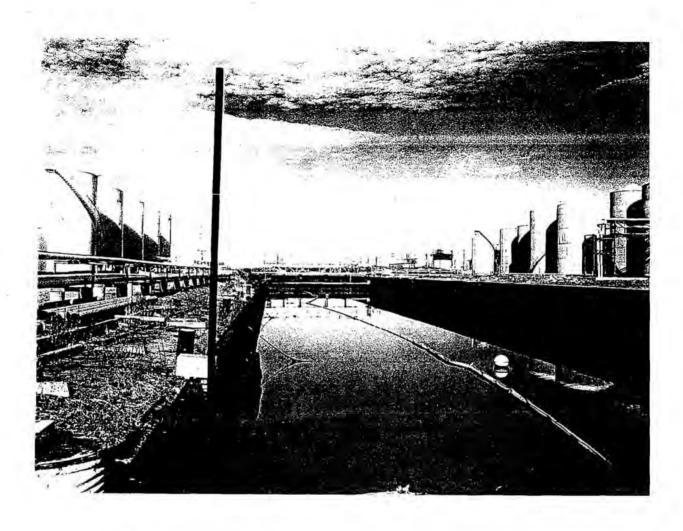
Background: The 200-acre Bayonne Industries (BI) site (the site) has been the location of industrial activity relating to the production and distribution of petroleum products since the 1870's. Beginning in the 1870's the site was occupied by a large refinery operated by the Tidewater Oil Co. In 1956, the site was sold to Bayonne Industries, Inc., which operated it as a bulk liquid storage and distribution terminal. The present owner, IMTT, purchased the site in 1983 and continues to operate it as a storage and distribution terminal for petroleum products, such as gasoline, lubricating and heating oil, plasticizers and "other chemicals". The site has been found to be contaminated with free product and chromium slag in investigations carried out to date. The site is located directly to the west of the Exxon Bayonne site, another former refinery, now primarily a petroleum storage, blending, packaging and distribution facility. The Platty Kill Canal/creek (the canal) forms part of the border between the southern portions of the eastern side of the Bayonne Industries site and the western side of the former Exxon Bayonne site and discharges to the Kill Van Kull waterway. The northern (northwest-southeast-running) portion of the present Platty Kill Canal is a remnant of the original Platty Kill Creek. Much of the original creek was filled in, along with part of the Kill Van Kull, during the development of the site as a refinery. The lower (north-south running) end of the present Platty Kill Canal was left unfilled and may also have been dredged out to form a barge canal, along with the still-existing portion of the original creek. For many years, BI used the farthest upstream end of the canal, which is within the borders of the BI site, as an oil/water separator. This area, called the Platty Kill Pond (the pond) is now separated from the canal by an earthen dam, and will be remediated (solidification is planned) under a separate RAW. Oily sludges are present in both the pond and canal. These sludges and the underlying sediments are highly contaminated, mostly with TPH, PAHs, metals (primarily arsenic and lead), petroleum-related volatiles and other contaminants. Sludges and sediments in the pond and the upstream end of the canal have been found to be more highly contaminated than those closer to the mouth of the creek. Oily sheens are present on the surfaces of both water bodies. Free product has been detected in monitor wells installed next to the pond, and also in monitor wells next to the canal on both the BI and former Exxon Bayonne sides. BI and Exxon have agreed to cooperate in remediating the canal.

Borings have been performed in the pond and canal to sample the sludges and sediments for chemical characterization and to determine the physical characteristics of the sediments immediately underlying the contaminated zone. Evidence from these borings indicates that, in the pond, the contaminated sludges are underlain by a sand layer, which, according to boring logs from the pond and canal, may be approximately 1-7 ft. thick. Underlying the sand in the pond and in the canal near the pond is a red-brown silt with gravel, grading into silty clay and clay. Vibrocore borings near the mouth of the canal Borings performed adjacent

place to seal off the sand layer, which may be contaminated with NAPL and/or dissolved contamination on the BI side, as it is on the former Exxon side of the canal. The sand layer had not been penetrated in the vicinity of the canal on the BI side. BI then proposes to drill inside the smaller set of augers using the mud rotary method to a maximum depth of 15 ft, below the top of the till. BI proposes to take split spoon samples at a minimum of every five ft, and a shelby tube sample of the till in each boring. All soil samples are proposed to be described by environmental consulting company personnel and screened with A PID.

Comments:

- 1. The exploratory soil borings proposed to be installed on land, along the sides of the canal, shall be double cased, with the outer casing grouted into the meadow mat and the inner casing grouted into the top of the till. In accordance with NJDEP casing requirements, the borehole diameter outside the casing shall be a minimum of four inches larger than the outer diameter of the casing, and the outer casing diameter shall be a minimum of four inches greater than the inner casing diameter. Each casing shall each be drilled one foot, and driven one additional foot into the confining layer, and the annular spaces between the formations and casings and between the outer and inner casings shall be tremie grouted with an NJDEP-approved grout.
- 2. The exploratory soil borings proposed to be installed on land, along the sides of the canal shall be continuously split spoon sampled for the total depth of the boring, except for the interval in the till that is sampled with a shelby tube sampler. The reason for this requirement is that the purpose of the borings is to determine/verify the stratigraphy along the length of the canal on both sides and to determine whether or not it is suitable for the implementation of BI's proposed remedy. Split-spoon sampling every five ft. will not provide sufficiently high quality data for this purpose, particularly since the mud rotary method is proposed to be used for drilling in the till. In addition, the information gained from this effort will be a very useful contribution to the delineation of the horizontal and vertical extent of free and residual NAPL along the canal, which has not yet been performed on the BI side. This effort will also be useful to provide information on contamination in the silty sand/sand and gravel unit on the former Exxon side along the lower part of the canal.
- 3. The Soil Sampling Protocol (Attachment A) states under Item III (Abandonment of Borings) that, upon completion of sampling and monitoring activities at each boring, the hole will be filled with bentonite and/or cement in accordance with state regulations. NJDEP wishes to clarify that the soil borings proposed to be performed on land shall be sealed in accordance with the March 1993 revision of the Jan. 8, 1990 memorandum to all New Jersey Test Borer Certification applicants and all New Jersey Journeyman Well Driller applicants from Section Chief Robert Mancini, NJDEP Bureau of Water Allocation (attached). That is: all borings shall be tremie grouted from the bottom up with an NJDEP-approved grout, and the grout shall be pumped into the borehole until the density of the grout coming out of the top of the borehole is the same as the density of the grout being pumped in. An NJDEP Well Abandonment Report form shall be completed for each on-land soil boring. Sealing of the Vibrocore borings in the canal is not required under the scope of work proposed, as long as these borings mainly penetrate the sludges/contaminated sediments in the canal, only minimally penetrate the underlying till and do not fully penetrate a confining unit. If this is so, they are anticipated to be within the volume of material to be remediated/contained. It is most important that the boring program in the canal not compromise the remediation of this AOC.
- 4. All borings shall be drilled by a New Jersey licensed well driller or New Jersey certified borer under the required number of blanket boring permits. An NJDEP Monitoring Well Record form shall be completed for each boring by the licensed well driller or certified borer.
- 5. Section V of the Soil Sampling Protocol (Attachment A) states that the driller shall maintain a detailed boring log of the operations during all drilling proceedings and that this log should be available to the consultant for inspection at all times. In addition, each boring (on land and in the canal) shall be logged by a qualified geologist or hydrogeologist. This log shall include all the information required under N.J.A.C. 7:26E-3.6(a) 2. Geologist's logs of all borings and as-built drawings indicating the depths and diameters of all casings (as applicable) shall be included in the RI report for this project.





BAYONNE INDUSTRIES, INC.

March 25, 1998

Job #IMT01BYO

Bayonne, New Jersey
Platty Kill Canal Phase II
Sediment Investigation Report

CCA000047

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Appendix A Phase 2 Sediment Core Logs

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1.0 INTRODUCTION

The work reported here was undertaken to support the efforts of Bayonne Industries, Inc. (BI) and present tenant IMTT-Bayonne to work knowledgeably with neighbor Exxon in planning for the ultimate status of the Platty Kill Canal (canal), an abandoned barge slip. An earlier interest in using the canal as an acceptable site for maintenance dredging soils was determined to be premature, but the investigation was continued given the aforementioned primary purpose of this effort.

On April 2, 1996, ENSR Consulting and Engineering (ENSR), on behalf of BI submitted a Phase 2 Sediment Investigation Workplan for the canal to the New Jersey Department of Environmental Protection (NJDEP), Bureau of State Case Management (BSCM) for review and approval. The plan was developed based on discussions between the NJDEP and Dr. Robert Weaver, Corporate Technical Director, BI, and NJDEP's March 27, 1996 comments to the Platty Kill Creek Interim Remedial Action Report, dated November 1995. The field work was implemented by ENSR and included the collection and analysis of twenty-nine sediment core samples from eleven locations within the canal. These include seven locations in the canal between the sheetpile dam and the bridge at the northern section of the canal; and, four locations north of the bridge toward the Platty Kill Pond. Each sediment core was advanced to the depth of the meadow mat clay.

The objectives of the Phase 2 sediment investigation, supplementing results of the initial Phase I sediment investigation conducted in the fall of 1994, were to:

- Determine the thickness of the sediment/sludge layer in the Platty Kill Canal inside of the sheetpile dam;
- Determine the presence and depth of the meadow mat clay within the Platty Kill
 Canal;
- Provide a delineation of the contaminated sediment/sludge layer in the canal inside of the sheetpile dam; and,

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Determine the contaminant composition in the sediment/sludge.

The NJDEP, BSCM, conditionally approved the Phase 2 Sediment Investigation Plan on May 9, 1996. The NJDEP's conditional approval of ENSR's plan generally included the following:

- Total Petroleum Hydrocarbon Analysis was to be modified to Method OQA-AQM-025-10/91
- The boring locations were to be surveyed by a New Jersey licensed land surveyor.
- Analytical results were to be compared to Non-Residential Direct Contact Soil
 Cleanup Criteria and sediment quality guidelines developed by Long E.R., et al.
 now referenced in N.J.A.C. 7:26E-3.11, a.i.(3).
- Review and comparison of the Exxon data in preparation for a cross section of the Canal was to be included.

The field work was conducted on June 4-7, 1996. This report provides the results of the Phase 2 Canal Sediment Investigation. Section 2 of this report provides background information on the canal and also summarizes the Phase 1 investigation conducted in the Fall of 1994. Section 3 summarizes the actual Phase II field activities, Section 4 provides results, and Section 5 provides findings and conclusions. Section 6 includes recommendations for this Area of Concern (AOC) as identified in the BI MOA executed May 27, 1992.

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BACKGROUND 2.0

Bayonne Industries leases to IMTT-Bayonne, a bulk liquids storage facility consisting of several hundred storage tanks containing various grades of petroleum and related products. The site has a 100year history as a refinery and bulk storage facility. The Kill Van Kull borders the site to the south, while the canal partially borders the site to the east. The Platty Kill Pond is a former on-site surface impoundment which at one time formed the headwaters of the canal. The Platty Kill Pond received stormwater runoff from the facility until May 1978 when a wastewater treatment plant was put into operation at the facility. The Platty Kill Pond is presently separated from the canal by an earthen dam which contains an impermeable liner. The present ownership acquired Bayonne Industries' property in October of 1983.

The canal is an inactive barge slip surrounded by an artificially filled industrial land site. It is approximately 1000 feet in length and is separated from the Kill van Kull by a steel sheetpile dam that was installed in 1991 under permit by the U.S. Corps of Engineers. The sheetpile dam provides a physical barrier spanning the width of the canal and acts as a restraint for sediment migration.

Based on physical boundaries, the Platty Kill Canal was partitioned into three areas for this investigation. The first area is the northern section that includes the area from the earthen dam at the Platty Kill Pond, south to the pipe bridge that spans the canal. The second area is the mid-section that includes the area from the pipe bridge, south to the sheetpile dam at the mouth of the canal. The third area includes the section outside of the sheetpile dam (actually part of the Kill Van Kull).

In the fall of 1994, ENSR conducted a Phase I sediment investigation of the canal as part of the Platty Kill Creek Interim Remedial Action. That investigation included the collection and analysis of sediment samples from 16 locations. The locations included eight outside of the sheetpile dam toward the Kill Van Kull; four inside of the sheetpile dam between the dam and the pipe bridge; and four locations north of the pipe bridge toward the Platty Kill Pond. Those results were reported to the Department in November, 1995 in the report entitled Platty Kill Pond Interim Remedial Action Report Vols. 1 and 2. The

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Figures included in this report incorporate data from the 1995 report without repeating discussion or tabulation of those analytical results in this text.

The 1994 Phase I Sediment Investigation analytical results collected by ENSR in the mid-section of the canal indicate that some of the TPH concentrations in the upper zone are at, or slightly above 10,000 ppm; and TPH concentrations in the lower zone (below 4 feet) could exceed 10,000 ppm in the northern reaches (upstream portion) of the canal section near the pipe bridge. Individual organic compound and metals contaminant concentrations in sediment samples collected from this area, in both the upper and lower sediment zones, were previously reported by ENSR in Phase I to be below their respective soil cleanup criteria. ENSR also reported that analytical results from samples collected from the northern section of the canal for TPH in both the upper and lower sediment zones exceeded the 35,000 ppm NJDEP Hazardous Waste Criteria.

The 1994 Phase I Sediment Investigation analytical results collected from outside the sheetpile dam indicate that the total petroleum hydrocarbon (TPH) concentrations in the upper sediment zone (0 to 4 foot depth interval) are below 1,000 ppm; and the TPH concentrations in the lower sediment zone (below 4 feet) are less than 2,500 ppm. ENSR concluded in previous reports that analytical results from select sediment samples collected from outside of the sheetpile dam and analyzed for target compound list (TCL) volatile, semivolatile organic compounds and target analyte list (TAL) inorganics, indicate that all compounds detected were below the NJDEP Impact to Ground Water Soil Cleanup Criteria.

Samples from this most recent investigation are compared herein to Soil Cleanup Criteria and sediment criteria cited in the NJDEP letter (Long E.R., <u>Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estarine Sediments</u>) dated March 27, 1996 and now referenced as guidance in NJ.A.C. 7:26E.

Comparison of sediment analysis to these criteria is not intended to imply that they have been deemed appropriate as corrective action criteria but rather that they serve as an available benchmark to screen potential impacts or adverse ecological effects. At this time the results reported serve as a basis for

evaluating alternative remedial strategies that may be appropriate for this AOC which recognizes that the sediments in the canal are well confined behind the dam.

3.0 SUMMARY OF FIELD ACTIVITIES

ENSR collected sediment samples from eleven locations inside of the sheetpile dam in June of 1996. At each location, sediment was advanced to the core depth of the meadow mat or until the core met refusal, whichever was encountered first. For each 20 foot core, ENSR collected one sediment sample nominally for every five foot depth interval (with a maximum of 3 per core). Each sample collected was analyzed for Total Petroleum Hydrocarbons (TPH). At six of the sediment core locations, each of the sediment samples collected were also analyzed for Target Compound List (TCL) volatile and semi-volatile compounds, Target Analyte List (TAL) metals, PCB and pesticide compounds.

One core, Y9-PKC-SED-22 was not collected due to refusal at that location. Seven sediment cores were collected from the mid-section of the Platty Kill Canal inside of the sheetpile dam and south of the pipe bridge that spans the canal. Four sediment cores were collected from the area of the Platty Kill Canal on the northern side of the pipe bridge toward the Platty Kill Pond. Figure 1 provides the sediment core locations and associated cross sections.

Each of the sediment cores were collected using a portable vibratory corer mounted on a 22-foot motorized pontoon work platform. Twenty-nine samples plus QA/QC samples were submitted for laboratory analysis. The following procedure was followed to ensure that reliable and representative sediment samples were collected for analysis.

3.1 Sediment Sampling

Prior to initiating the sampling activity, all work areas (where practical), such as the floor of the work platform and the core extrusion/sampling area, were covered with plastic sheeting and all sampling equipment (core tubes, etc.) were steam cleaned. All field team members handling the sediment cores or the sediment corer were in modified level D protection. A core extrusion/sampling station was established in a central location onshore. A crane placed the work platform in the desired area within the canal. Once the work platform had been placed in the water, it was moved to the selected sampling location and the position was stabilized for coring.

A vibratory corer (AScI Model P-3) fitted with a lexon core tube was lowered into the water until the core sampling tube was located at the water-sediment interface. Once at the interface, the vibratory coring process commenced and continued until a full 20-foot core length of penetration was achieved, or refusal was reached (which was assumed to be at the meadow mat). Upon completion of the coring, the vibratory core was removed from the water and the tube ends were capped. Due to anticipated hole collapse, it was assumed that subaqueous grouting of the coring hole was not required. The work platform was then moved to shore and the core tube was transferred to field personnel at the onshore sample extrusion/sampling station. The core tube was cut lengthwise into two halves using a hand-held electric clipper. The shallow blade of the clipper permitted that only the lexon core tube was cut, yielding very little disturbance to the sediment core. After opening the core tube the sediment core was screened with an organic vapor analyzer, the core was logged and photo-documented, and then sampled.

A maximum of three samples were collected from each sediment core. The samples were composited for each 5-foot depth interval. The volatile organic fraction sample from each specified depth interval was collected using a stainless steel trowel. The remainder of the sample from each selected depth interval was transferred to a decontaminated, stainless steel bowl and homogenized, and then transferred to the appropriate sample jar for the remaining analytical fractions. To prevent cross-contamination, the laboratory cleaned sample containers remained sealed until the sample had been removed from the corer and homogenized. The sampler wore a new pair of disposable latex gloves for each sample collected. After a sufficient amount of sample had been placed in the container, the container was sealed and placed in a cooler that was kept at 4°C until final receipt at the laboratory. This procedure was repeated for each sediment core location. The sample containers were labeled in accordance with the procedures specified in the Sediment Investigation Work Plan. The coolers containing the samples and the chain-of-custodies were shipped from the site daily.

Each sample shipment was accompanied by a COC record from the time of collection until analysis was performed. The cooler containing the samples were custody sealed, and the COC accompanied the sample bottles during transportation to the field, sample collection, transportation to the laboratory, and analysis. When transferring the possession of samples, the individuals relinquishing and

receiving signed, dated, and noted the time on the record. This record documented sample custody transfer from the sampler, often through another person, to the Laboratory Sample Custodian.

Each shipping container was accompanied by the COC record identifying its contents. The back copy(s) of the COC record were detached and kept with the field notebook for subsequent placement into the ENSR project file following Project Management review; the original record accompanied the shipment. When under COC, sample bottles were secured in a locked vehicle or custody sealed in a shuttle when not in the presence of authorized personnel. Upon sample receipt, the Laboratory Sample Custodian logged the samples in, indicated the condition of each sample as received, and explicitly stated whether the COC seal was intact.

Table 1 provides the sample identification, analytical requirements and analytical methods for the sediment sampling program. All twenty-nine samples collected were analyzed for total petroleum hydrocarbons. Samples collected from six of the sediment core locations (four from the mid-section and two from the northern section) were also analyzed for TCL organics, pesticide/PCBs, and TAL inorganics. All samples were submitted for analysis to Industrial Environmental Analysts, Inc. (IEA), Whippany, New Jersey, Certification Number 14530. Laboratory deliverables complied with 10% full laboratory deliverable and 90% reduced laboratory deliverable reporting requirements specified in the NJDEP proposed Technical Requirements for Site Remediation.

Environmental duplicate samples were collected at a frequency of one per twenty samples. Field blanks were collected at a frequency of one per day. Each QA/QC sample was analyzed for the same parameters as the sediment samples. Since no aqueous samples were collected, no trip blanks were collected or analyzed.

Following sampling of each core, all sampling equipment to be reused was decontaminated in accordance with the procedures specified in the NJDEP FSPM. The plastic covering was replaced for the work surface at the sampling station to avoid possible cross-contamination.

The excess sediment not used during sampling was temporarily placed on plastic sheeting.

Following the completion of the sediment sampling program, the sediment was disposed of directly back into the Platty Kill Canal.

3.2 Surveying

All sediment sample locations were marked with weighted buoys for surveying. At the conclusion of the sediment sampling program, all sampling locations were surveyed by a certified Professional Land Surveyor, J. Peter Borbas, PLS, Boonton, New Jersey. Elevations for each location were obtained by recording the depth to water, at the time of sampling, from a fixed location on the Platty Kill Canal (a surveyed Stevens Recorder), then, by subtracting the depth to water at each location, recorded at the time of sampling, the elevation of the water/sediment interface was obtained.

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4.0 RESULTS

From June 4 to 7, 1996, eleven shallow sediment cores (Y9-PKC-SED-17 through Y9-PKC-SED-28 on Table 1) were collected from the bed of Platty Kill Canal using a floating platform mounted vibracoring device. Seven cores were collected from inside the sheetpile dam and four were collected north of the pipe bridge. Figure 1 provides the sediment core locations. For each core location, one lexon core tube was driven between 6 and 14.5 feet into the canal bed. Upon extrusion of the sediment core from the tube, the sediments were characterized and up to three sediment samples were collected for analysis.

4.1 Stratigraphic Characterization - Platty Kill Canal

The ENSR Phase 2 sediment core logs are provided in Appendix A. The Phase 1 sediment core logs are provided in Appendix B, Exxon monitoring well logs are included in Appendix C. In reference to Appendices A and B, the sediments observed in the Platty Kill Canal primarily consist of thin deposits of black silt and clay overlying coarser sediments (i.e., sand and gravel, sand-silt-clay mixtures and meadow mat clay) with clay underlying the length of the canal. In general, the highest photoionization detector (PID) readings (100 to 130 ppm) were observed at depths greater than 5 feet.

The sediment boring logs from this sediment investigation and the previous Phase I investigation conducted in the fall of 1994, along with boring logs from BI and Exxon monitoring wells installed on both sides of the Platty Kill Canal were used to generate stratigraphic cross sections of the canal and surrounding area. These cross-sections are presented on Figure 1. All soil boring and sediment core elevations are referenced to mean sea level.

Cross Section A-A' identifies the stratigraphic units from the pipe bridge spanning the canal to the sheetpile dam at the mouth of the Platty Kill Canal. The sheetpile dam is a physical barrier spanning the width of the canal and acting as a restraint to sediment migration.

Cross Section B-B' identifies the stratigraphic units in the northernmost portion of the Platty Kill Canal, from the earthen dam at the Platty Kill Pond to the pipe bridge spanning the canal.

Cross Section C-C' identifies the stratigraphic units across the center of the Platty Kill Canal, just north of the bridge and tied into Exxon's soil borings PKMW-13 and PKMW-6. The bed of the Platty Kill Canal at the time of the sampling program was found to occur between 3 and 7 feet below mean sea level. The canal bed topographically slopes towards the Kill Van Kull.

In reference to Cross Section B-B', a silt unit (with varying amounts of clay), approximately 5 to 8.5 feet thick, conformably overlies a unit of silt and clay, with organic fibers, in the northernmost part of the Platty Kill Canal. This represents silt filling up naturally over the meadow mat clay previously identified in other locations throughout the site.

In the northern and central portions of the Platty Kill Canal, Cross Section A-A', the silt and clay unit occurs comformably from the top of the canal bed to approximately 2.5 to 11 feet below the bed surface. Underlying the silt and clay unit, a silt and clay unit with varying amounts of coarse sand and gravel, several feet thick, was observed south of Y9-PKC-SED-19. Below this layer is a silt and clay layer, that appears to underlie the entire Platty Kill Canal.

As shown on Cross Section C-C', a red/brown silt unit also occurs beneath the entire Platty Kill Canal, occurring approximately 20 to 25 feet below mean sea level.

4.2 Chemical Analysis

A total of twenty-nine sediment samples were collected for analysis of total petroleum hydrocarbons (TPH); a maximum of three were collected from each sediment core along with two duplicate samples. In addition, twenty of these samples, including the two duplicate samples, were further analyzed for target compound list (TCL) volatile and semi-volatile organic compounds, pesticides/PCBs, and target analyte list (TAL) inorganics. All samples were submitted for chemical analysis to IEA Laboratories, Whippany, New Jersey laboratory certification #14530.

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Table 2 provides a summary of TPH concentrations for each sediment sample collected. Table 3 provides a summary of the analytical results for volatile and semi-volatile organic compounds, inorganic compounds, pesticides and PCBs. The summary table compares the analytical results to NJDEP's NRDCSCC (NJAC 7:26D) and sediment criteria compiled by Long et. al. Given the variation between the two, specific comparison is presented in tabular form only including the data and both criteria.

The laboratory analytical results were validated by ENSR's validation group in Acton, Massachusetts. The analytical results were found to be valid and may be used for decision making purposes. Appendix D provides the validated analytical summary pages for the sediment sampling program. A copy of the IEA analytical report packages for the sediment investigation have been submitted as Appendix E.

To aid in the evaluation of the analytical results, the sediments were divided into three depth intervals. The upper zone which includes the zone from the top of the canal bed to a depth of five feet; a middle zone which includes the interval from five feet to 10 feet, and the lower zone which includes the sediment interval greater than ten feet. The upper, middle, and lower zone are discussed separately in the following sections.

For evaluation and presentation purposes, analytical results have been separated into the following groups: total petroleum hydrocarbons (TPH); total benzene, toluene, ethylbenzene and xylenes (BTEX); total semi-volatile organic compounds (SVOC), and metals.

Platty Kill Canal Upper Sediment Zone (0 to 5 Feet) 4.2.1

Total petroleum hydrocarbons in the upper sediment zone were detected in all eleven samples collected from this zone, at concentrations ranging from 4,000 ppm (Y9-PKC-SED-17A) to 180,000 ppm (Y9-PKC-SED-21C). The TPH concentrations in the upper sediment zone have been plotted and contoured on Figure 2. This map incorporates results from both sediment investigation phases. As shown on Figure 2, the highest TPH concentrations occur in the northern portion of the Platty Kill Canal. The

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(Y9-PKC-SED-21C). The TPH concentrations in the upper sediment zone have been plotted and contoured on Figure 2. This map incorporates results from both sediment investigation phases. As shown on Figure 2, the highest TPH concentrations occur in the northern portion of the Platty Kill Canal. The isoconcentration lines shown on Figure 2 depict a TPH concentration gradient which decreases towards the mouth of the Platty Kill Canal.

Six of the samples from the sediment cores (Y9-PKC-SED-17A, -19A, -21A, -23A, -25A, and -27A) were further analyzed for TCL volatile and semi-volatile organic compounds. Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) were detected in five of the sediment core samples (Y9-PKC-SED-17A, -19A, -21A, -23A, and -27A) with concentrations ranging from 0.22 ppm (Y9-PKC-SED-19A) to 49 ppm (Y9-PKC-SED-27A). Chlorobenzene and tentatively identified compounds (TICs) were the only other volatile organic compounds detected in the six samples submitted for VOC analysis. Figure 3 provides an isoconcentration map of BTEX concentrations in the upper sediment zone. At sample location Y2-PKC-SED-25A, BTEX was not detected in the upper sediment zone. BTEX concentrations that are greater than 45 ppm remain in the northern reaches of the canal. Based on the isoconcentration maps, there is good correlation in terms of the BTEX and TPH concentration distribution in the sediment.

Semi-volatile compounds (SVOC) were detected in all six sediment cores, with total SVOC concentrations ranging from 55.1 ppm (Y9-PKC-SED-22A) to 1075.3 ppm (Y9-PKC-SED-21A). Of the SVOC detected in these sediment cores, polyaromatic hydrocarbon compounds (PAHs) make up a significant portion of the SVOCs detected. Total PAH concentrations range from 24.2 ppm (Y9-PKC-SED-19A) to 713 ppm (Y9-PKC-SED-21A). The SVOC concentrations in the upper sediment zone have been plotted and contoured on Figure 4. The highest SVOC concentrations occur in the central portion of the Platty Kill Canal. The SVOC concentration gradient decreases steeply towards the mouth of the Platty Kill Canal. As with the BTEX concentrations, the distribution of SVOC concentrations in the sediment display a good correlation with the TPH concentrations.

Residual pesticide concentrations were detected in the samples collected from this upper zone as provided in Table 3. No PCBs were detected above their respective laboratory quantitation limits in any of the samples collected from the upper zone.

Total metal concentrations of the sediments are included on Table 3. These results represent the concentration of selected metals in the sediment and no evaluation has been conducted of leaching potential or background conditions in the area.

Of the metals detected in the sediment, arsenic and lead were the most significant in terms of concentrations. The highest lead, zinc, and arsenic concentrations in the upper sediment zone were detected in the northern most portion of the canal at sediment core location Y9-PKC-SED-25A at the turn in the canal. In general, the concentrations at this location were at least one order of magnitude higher than that of the other sediment sample locations. Inside of the sheetpile dam, lead concentrations ranged from 554 ppm to 11,600 ppm; arsenic concentrations ranged from 29.5 ppm to 629 ppm; Zinc concentrations ranged from 713 ppm to 1,530 ppm. These are representative of total metal concentrations found in the sediments and do not represent leachate potential.

4.2.2 Platty Kill Canal Middle Sediment Zone (5 to 10 feet)

Total petroleum hydrocarbons were detected in all eleven samples collected from the middle sediment zone, with concentrations ranging from 24,000 ppm (Y9-PKC-SED-28B) to 160,000 ppm (Y9-PKC-SED-27B). The TPH concentrations in the middle sediment zone have been plotted and contoured on Figure 2. This map incorporates results from both sediment investigation phases. As shown on Figure 2, similar to the TPH distribution in the upper zone, the highest TPH concentrations in the middle zone occur in the northern portion of the Platty Kill Canal. The isoconcentration lines shown on Figure 2 depict a TPH concentration gradient which decreases towards the mouth of the Platty Kill Canal.

Six of the samples from the sediment cores (Y9-PKC-SED-17B, -19B, -21B, -23B, -25B, and -27B) were further analyzed for TCL volatile and semi-volatile organic compounds. BTEX compounds were detected in five of the sediment core samples (Y9-PKC-SED-17B, -19B, -21B, -23B, and -27B) with concentrations ranging from 27 ppm (Y9-PKC-SED-19B) to 617 ppm (Y9-PKC-SED-23B). BTEX compounds were not detected in sample Y9-PKC-SED-25B. Chlorobenzene was the only other volatile organic compound detected in the six samples submitted for VOC analysis. Figure 3 provides an

from both sediment investigation phases. Based on the BTEX isoconcentration map, BTEX concentrations appear to decrease south of sediment sample Y9-PKC-SED-17B. The BTEX and TPH concentration distribution in the sediment displays a good correlation.

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SVOC (including TICs) were detected in all six sediment core samples collected from the middle sediment zone, with total SVOC concentrations ranging from 516.4 ppm (Y9-PKC-SED-19B) to 3038.2 ppm (Y9-PKC-SED-27B). The SVOC concentrations in the middle sediment zone have been plotted and contoured on Figure 4. These maps incorporate results from both sediment investigation phases. The highest SVOC concentrations in the middle sediment zone occur in two separate areas within the Platty Kill Canal. The PAH and SVOC concentration gradient decreases steeply towards the mouth of the Platty Kill Canal. The concentration distribution of SVOC and the PAH in the middle sediment zone display a good correlation with the TPH results.

Some residual pesticide concentrations were detected in the samples collected from this middle zone and are provided in Table 3 with associated criteria. No PCBs were detected above their respective laboratory quantitation limits in any of the samples collected from the middle zone.

Of the total metals detected in the sediment, arsenic and lead were the most significant in terms of concentrations. These results represent total metals found in the sediment matrix. The highest lead and arsenic in the middle sediment zone were detected in the northern most portion of the canal at sediment core location Y9-PKC-SED-25B. In general, the concentrations at this location were at least one order of magnitude higher than that of the other sediment sample locations. Inside of the sheetpile dam, lead concentrations in the upper sediment zone ranged from 844 ppm to 4860 ppm; arsenic concentrations ranged from 54.4 ppm to 131 ppm.

4.2.3 Platty Kill Canal Lower Sediment Zone (10 to 15 feet)

Total petroleum hydrocarbons were detected in all seven samples collected from the lower sediment zone, with concentrations ranging from 24,000 ppm (Y9-PKC-SED-17C) to 180,000 ppm (Y9-PKC-SED-21C). The TPH concentrations in the lower sediment zone have been plotted and contoured on Figure 2.

Five of the samples from the sediment cores (Y9-PKC-SED-17C, -19C, -21C, -23C, and -27C) were further analyzed for TCL volatile and semi-volatile organic compounds. BTEX compounds were detected in all five of the sediment core samples with concentrations ranging from 152 ppm (Y9-PKC-SED-17C) to 413 ppm (Y9-PKC-SED-27C). Chlorobenzene was the only other volatile organic compound detected in the seven samples submitted for VOC analysis. Figure 3 provides an isoconcentration map of BTEX concentrations in the lower sediment zone. Based on the BTEX isoconcentration map, BTEX concentrations appear fairly uniform in the lower zone.

SVOC were detected in all five sediment core samples collected from the lower sediment zone, with total SVOC concentrations ranging from 1644.9 ppm (Y9-PKC-SED-17C) to 2534.1 ppm (Y9-PKC-SED-19C). The SVOC concentrations in the lower sediment zone have been plotted and contoured on Figure 4. The highest SVOC concentrations in the lower sediment zone occur in two separate areas within the Platty Kill Canal. The SVOC concentration gradient decreases steeply towards the mouth of the Platty Kill Canal. The concentration distribution of SVOC in the lower sediment zone display a good correlation with the TPH results.

Some residual pesticide concentrations were detected in the samples collected from this lower zone and are provided in Table 3 with their associated criteria. No PCBs were detected above their respective laboratory quantitation limits in any of the samples collected from the lower zone.

Of the metals detected in the sediment samples collected from the lower zone, arsenic and lead were the most significant in terms of concentrations. Again, these represent the total metal concentration found in the sediments. The highest lead and arsenic in the lower sediment zone were detected in the northern

concentrations in the lower sediment zone ranged from 1,120 ppm to 3,020 ppm; arsenic concentrations ranged from 80.6 ppm to 282 ppm.

4.2.4 Comparison of Results to Criteria

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As per the Department's May 9, 1996 conditional approval letter, BI has developed a comparison to both the NJDEP Soil Cleanup Criteria and the criteria presented in Long, E.R., and D.D. MacDonald, S.L. Smith and F.D. Calder, Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments, Environmental Management 19:81-97, 1995.

In the upper sediment zone (0-5 feet), 15 out of 29 sediment samples collected from the canal exhibited TPH concentrations above 10,000 ppm. These were all located in the northern portion of the canal, between the earthen dam at the Platty Kill Pond and the approximate mid-point of the canal (in the vicinity of sediment core locations Y9-PKC-05 and -06). In the middle sediment zone (5-10 feet), 17 out of the total 29 sediment samples collected exhibited TPH concentrations above 10,000 ppm. These are all located in the northern reaches of the canal, from the earthen dam to a point approximately midway between the pipe bridge that spans the canal and the sheetpile darn at the mouth of the canal (in the vicinity of core sample locations Y9-PKC-05 and -06). All TPH concentrations in sediment samples (seven total) collected from the lower sediment zone (greater than 10 feet) exceeded 10,000 ppm TPH. No sediment samples were collected from the lower zone during the Phase 1 sediment investigation. All sediment samples previously collected from outside the sheetpile dam, both in the upper and middle sediment zones, exhibited TPH concentrations below 4,500 ppm. During the Phase 2 sediment investigation, no samples were collected from outside the sheetpile dam.

Selected sediment cores were submitted for volatile and semi-volatile organic compound, pesticide/PCB and metals analysis. Eight sediment cores (Y9-PKC-SED-01, -06, -17, -19, -21, -23, -25, and -27) displayed volatile organic concentrations including benzene (13 ppm), total xylenes (1000 ppm) and chlorobenzene (680 ppm). Four semi-volatile organic compounds, naphthalene, acenaphthalene, fluorene, and dietnylphthalate, were detected in the middle and/or lower sediment zone at core locations Y9-PKC-SED-17, -19, -23, -25, and -27.

Concerning the metal detections within the sediment cores, the variation between the Soil Cleanup Criteria and the Long criteria is significant for some metals. As such the most informative approach to evaluating these compounds is by review of Table 3.

Comparison of Results to Exxon Data

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As requested in the May 9, 1996 NJDEP conditional approval letter, a comparison has been made of the data collected by ENSR to the data presented in the Exxon Bayonne Site Remediation Report prepared by Dan Raviv Associates Inc. (DRA) dated December 14, 1994.

In general, DRA reports finding "sludge" in the canal to a depth of approximately -20 feet below mean sea level (bmsl). This is in contrast to ENSR's specific characterization of the same material as clay, silt, sand and gravel. The difference is likely based on sample collection methodology. The vibracore methodology, used and explained in Section 3.1 of this report, provided for a more detailed logging of sediments by ENSR. DRA collected "four over water borings" completed by driving four-inch diameter steel casing into the sediments then used a split-spoon sampler to collect sediments from inside the 4-inch pipe. A second set of three samples were collected by DRA from a boat, with a hand auger, to a maximum depth of four feet into the sediment. All of these samples were apparently disturbed during these processes, not allowing for the detail ENSR was able to provide.

Land based geologic conditions defined by DRA on the eastern side of the PKC have been incorporated into Figure 1 along with Geologic conditions defined by ENSR on the west side. The two compare favorably, with the most significant difference being the presence of free product found in the soil by DRA on the Exxon property. This finding was based on well installations showing significant quantities of free product.

Further review of the DRA report leaves open several questions associated with the source for the PKC sediment contamination. The statement by DRA that free product is not migrating into the PKC past the Exxon bulkhead from a depth of some 15 to 20 feet bmsl appears questionable given the observations in Figure 4 of the same DRA report that boring B-9, located in the canal, has what is defined in the legend of the figure as a "discontinuous layers of petroleum impacted soil in the confined zone." To eliminate

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migration of contaminants from these soils to the canal, any confining layer would need to be continuous, extending the canals entire length. DRA has not addressed the actual permeability of what they classified as sludge in the area of borings B-9, B-10, B-11 and B-12 shown on Figure 4 of the DRA Report.

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The DRA Report further proposes that "overall the flow of water from the deep zone to the canal occurs less than 50% of the time". This might suggest that product can not flow out of the confining zone into the canal. However, no mechanism is proposed (such as on-shore pumping from a confining unit) to support a hypothesis that is contrary to natural discharge of ground water towards the ocean. In addition, conductivity measurements taken of water during the pumping test by DRA from PKMW-12 and PKMW-13 were found to be consistent with ground water rather than canal water. DRA further reports in Section 5.3.3 "... the conductivity of the ground water in wells PKMW-12 and PKMW-13 did not increase (during the pumping test) as would be expected if there was recharge from the canal." This would reinforce the expectation that the confined unit does discharge to the canal.

Overall, the statement that the bulkhead and confining unit are preventing impacts from the west side of the canal is not really supported and the prospective source of continuing contamination should be addressed further prior to any remedial action in the canal.

5.0 FINDINGS

Based on the results of the Phase 1 and Phase 2 sediment investigations conducted on the Platty Kill Canal, the following can be generally concluded:

- Stratigraphic and analytical data indicate that the sheetpile dam effectively restrains sediment migration down stream in the canal and therefor protects potential ecological receptors just outside the dam and in the Kill Van Kull.
- Analytical results from samples previously collected from outside the sheetpile dam
 indicate that the TPH concentrations in the upper sediment zone (0 to 4 foot depth interval)
 are below 1,000 ppm; and the TPH concentrations in the lower sediment zone (below 4
 feet) are less than 2,500 ppm.
- 3. TPH concentrations within the sheetpile dam and in the northern reaches of the canal generally exceed the 10,000 ppm total organic compounds. In general, these TPH concentrations in both the upper and middle zones are located in the northern portion of the canal. At the approximate mid-point of the canal, the TPH concentrations decrease significantly to concentrations below 10,000 ppm.
- Specific criteria, presented by Long et. al., have been exceeded for both organic and inorganic compounds and as such further planning for closure of this AOC is warranted.
- 5. A silt unit (with varying amounts of clay), approximately 5 to 8.5 feet thick, conformably overlies a unit of silt and clay meadow mat with organic fibers, in the northernmost part of the Platty Kill Canal. In the central and southern portions of the Platty Kill Canal, the silt and clay unit occurs comformably from the top of the canal bed to approximately 2.5 to 11 feet below the bed surface. Below this layer is a silt and clay layer, with some organic fibers, that appears to underlie the entire Platty Kill Canal. A red/brown silt unit occurs

beneath the entire Platty Kill Canal, occurring approximately 20 to 25 feet below mean sea level. Testing of clay units during the site wide investigation indicated permeability ranges on the order of 10^{-7} cm/sec.

- 6. Although the TPH concentrations are relatively high, individual VOC and SVOC concentrations are low, with very few exceedances of their respective NJDEP soil criteria. Most exceedances noted are within one order of magnitude or less of the respective criteria. Detected VOCs in the sediments are limited to BTEX compounds and chlorobenzene.
- No PCBs were detected in any of the sediment samples at concentrations above their
 respective laboratory quantitation limits. Some residual pesticides were detected at limited
 concentrations.
- 8. Arsenic and lead are among the metals present in the sediments and appear to be the inorganic compounds requiring consideration and further evaluation. Total metal concentrations of the sediments are included on Table 3. These results represent the concentration of selected metals in the sediment and no evaluation has been conducted of leaching potential or background conditions in the area.
- A potential source has been identified on the Exxon side of the PKC for product to migrate into the PKC. The only barrier between significant product from discharging directly into the canal is a wooden bulkhead installed in 1953.

6.0 RECOMMENDATIONS

No further sediment investigatory work is recommended at this time due to the ongoing investigation and closure strategy being developed for the Platty Kill Pond. The area that now includes the Platty Kill Pond and a portion of the Exxon facility, at one time incorporated the headwaters of the canal. The approved approach for closure of the Platty Kill Pond will provide information and experience crucial to developing appropriate closure for the canal. During a future phase of the MOA program, a Remedial Action Workplan will be developed for closure of this Area of Concern.

7.0 CERTIFICATION

I certify under penalty of law that the information producted in this document is true, accurate and complete to the best of my knowledge. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Robert C. Weaver

Vice President, Technical Director

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Robert C. Weaver

Vice President, Technical Director

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Volume II of II, Appendices, Non-Aqueous Phase Liquid (NAPL), Interim Remedial Measures Investigation, Platty Kill Canal Area, Exxon Bayonne Plant, Bayonne, New Jersey, DRAI Job No. 93C1295, December 14, 1994

Responses to NJDEP's Comments on the NAPL IRM Report and Addendum to the NAPL IRM Investigation Well PKMW16, The Platty Kill Canal Area, Former Exxon Bayonne Terminal, DRAI Job No. 93C1295, June 4, 1996

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TABLE 1: SAMPLE IDENTIFICATION, ANALYTICAL REQUIREMENTS AND ANALYTICAL METHODS FOR SEDIMENT SAMPLING PROGRAM

Platty Kill Canal Phase 2 Sediment Investigation

Bayonne Industries, Inc. Bayonne, New Jersey

SAMPLE ID NUMBER	ANALYTICAL PARAMETERS
Y9-PKC-SED-17A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-17B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-17C	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-18A	ТРН
Y9-PKC-SED-18B •	ТРН
Y9-PKC-SED-19A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-19B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-19C	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-19D (DUP)	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-20A	ТРН
Y9-PKC-SED-20B	ТРН
Y9-PKC-SED-20C	ТРН
Y9-PKC-SED-21A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-21B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-21C	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-23A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-23B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-23C	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-24A	ТРН
Y9-PKC-SED-24B	ТРН
Y9-PKC-SED-25A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-25B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-26A	ТРН

table.1 March 4, 1998 Page 1 of 2

TABLE 1: SAMPLE IDENTIFICATION, ANALYTICAL REQUIREMENTS AND ANALYTICAL METHODS FOR SEDIMENT SAMPLING PROGRAM

Platty Kill Canal Phase 2 Sediment Investigation

Bayonne Industries, Inc. Bayonne, New Jersey

SAMPLE ID NUMBER	ANALYTICAL PARAMETERS
Y9-PKC-SED-26B	ТРН
Y9-PKC-SED-26C	TPH
Y9-PKC-SED-27A	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-27B	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-27C	TPH, TCL, TAL, PCBs/Pesticides
Y9-PKC-SED-28A	TPH
Y9-PKC-SED-28B	ТРН

TPH - Total Petroleum Hydrocarbons - EPA Method OQA-QAM-025-10/91

TCL - Target Compound List Organics - EPA Method 3550/8240/8270

TAL - Target Analyte List Inorganics - EPA Method 3050/6010/7000

PCBs/Pesticides - EPA Method 8080

Y9-PKC-SED-19D is a duplicate of Y9-PKC-SED-19B

Reference No.: 3782-009(4)/SEDSAMP.TBL

table.1

TABLE 2: SUMMARY OF TOTAL PETROLEUM HYDROCARBON ANALYTICAL RESULTS

Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industaries, Inc. Bayonne, New Jersey

DEPTH	0-5 ft. A	5-10 ft. B	10-15 ft. C
SAMPLE #	Total	Petroleum Hydroca	rbons
PKCSED-17	4000 J	100,000 J	24,000 J
PKCSED-18	39,000	55,000	
PKCSED-19	19,000 J	32,000 J	110,000 J
PKCSED-20	46,000	39,000	91,000
PKCSED-21	110,000 J	57,000 J	180,000 J
PKCSED-23	110,000 J	120,000 J	80,000 J
PKCSED-24	90,000	120,000	
PKCSED-25	170,000	66,000	
PKCSED-26	71,000	100,000	160,000
PKCSED-27	88,000	160,000	95,000
PKCSED-28	170,000	24,000	

Notes: All results expressed in parts per million.

J = Estimated Value.

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platry Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE	PKCSED17B 62372014 06/06/96 SLUDGE	PKCSED17C 62372015 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines from Long et. al.	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS							Guidelines from Long et. al.
VOLATILES								
Chloromethane	UG/KG	3400 U	6800 U	15000 U	1000000	10000		
Bromomethane	UG/KG	3400 U	6800 U	15000 U	1000000	1000		2
Vinyl Chloride	UG/KG	3400 U	6800 U	15000 U	7000	10000		
Chloroethane	UG/KG	3400 U	6800 U	15000 U	T			
Methylene Chloride	UG/KG	1800 U	3500 U	7800 U	210000	1000		
Acetone	UG/KG	3400 U	6800 U	15000 U	1000000	100000		
Carbon Disulfide	UG/KG	1800 U	3500 U	7800 U	J			
1,1-Dichloroethene	UG/KG	1800 U	3500 U	7800 U	150000	10000		
1,1-Dichloroethane	UG/KG	1800 U	3500 U	7800 L	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	1800 U	3500 U	7800 U	T .	50000		
Chloroform	UG/KG	1800 U	3500 U	7800 L	28000	1000		
1,2-Dichloroethane	UG/KG	1800 U	3500 U	7800 U	24000	1000		
2-Butanone	UG/KG	3400 U	6800 U	15000 U	1000000	50000		
1,1,1-Trichloroethane	UG/KG	1800 U	3500 U	7800 U	1000000	50000		
Carbon Tetrachloride	UG/KG	1800 U	3500 U	7800 L	4000	1000		
Bromodichloromethane	UG/KG	1800 U	3500 U	7800 U	46000	1000		
1,2-Dichloropropane	UG/KG	1800 U	3500 U	7800 U	43000			
cis-1,3-Dichloropropene	UG/KG	1800 U	3500 U	7800 L	5000	1000		
Trichloroethene	UG/KG	1800 U	3500 U	7800 L	J 54000	1000		
Dibromochloromethane	UG/KG	1800 U	3500 U	7800 L	1000000	1000		
1,1,2-Trichloroethane	UG/KG	1800 U	3500 U	7800 L	420000	1000		
Benzene	UG/KG	1800 U	3500 U	7800 L	13000	1000		
Trans-1,3-Dichloropropene	UG/KG	1800 U	3500 U	7800 L	5000			
Bromoform	UG/KG	1800 U	3500 U	7800 L	370000	1000		
4-Methyl-2-Pentanone	UG/KG	3400 U	6800 U	15000 U	1000000	50000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation TABLE 3:

Bayonne Industries, Inc. Bayonne, New Jersey

LIENT ID: AB ID: AMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE		PKCSED17B 62372014 06/06/96 SLUDGE		62372015 06/06/96		Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)	
PARAMETERS	UNITS									from Long et. al.	Guidelines from Long et. al.	
2-Hexanone	UG/KG	3400	U	6800 L	J 1	5000	U					
Tetrachloroethene	UG/KG	1800	U	3500 t	J 7	800	U	6000				
Toluene	UG/KG	1800	U	3500 t	J	2000		1000000		500000		
1,1,2,2-Tetrachloroethane	UG/KG	1800	U	3500 U	J 7	7800	U	70000	150	1000		
Chlorobenzene	UG/KG	6000		3500 t	J 7	7800	U	680000	2	1000		
Ethylbenzene	UG/KG	3800		29000	2	20000	1	1000000		100000		
Styrene	UG/KG	1800	U	3500 t	J 7	7800	U	97000		100000		
Total Xylenes	UG/KG	4300		190000	1	20000		1000000	7 =	10000		
VOLATILE TICS												
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG			170000 J	N							
Cyclohexane, Methyl-	UG/KG	46000	JN	860000 J	N							1
Unknown Cycloalkane	UG/KG	18000	J	460000 J	1	190000	J					
1h-Indene, Dihydro-Methyl Isomer	UG/KG						Н					-
Ethyl Dimethyl Benzene Isomer	UG/KG	24000	1	240000 J					4			
Ethylmethyl Benzene Isomer	UG/KG	18000	J	200000 J	1	160000	J					
Unknown Alkane	UG/KG	92000	1	240000 J	1 4	400000	J					
Methyl Propyl Benzene Isomer	UG/KG											
Trimethyl Benzene Isomer	UG/KG			110000 J	ſ		П					
1h-Indene, Dihydro-Dimethyl Isomer	UG/KG						1					
Methyl Naphthalene Isomer	UG/KG	18000	J									
Naphthalene	UG/KG	18000	J	190000	5	54000		4200000			160	2100
Cyclohexane, 1-Ethyl-2-Methyl-, Cis- (8c	UG/KG	5400	1		2		J N					
Pentalene, Octahydro-2-Methyl-	UG/KG											
Diethyl Benzene Isomer	UG/KG	17										
Methyl Methylethyl Benzene Isomer	UG/KG	20000	J		11							

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE		PKCSED17B 62372014 06/06/96 SLUDGE	PKCSE 62372 06/06 SLUI	015 5/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								from Long et. al.	Guidelines from Long et. al.
Unknown Aromatic	UG/KG				230000	J				
SEMI-VOLATILES							~			
Phénol	UG/KG	28000	U	28000 t	25000	U	10000000	50000		
Bis(2-Chloroethyl)Ether	UG/KG	28000	U	28000 T	25000	U	3000	10000		
2-Chlorophenol	UG/KG	28000	U	28000 t	25000	U	5200000	10000		
1,3-Dichlorobenzene	UG/KG	28000	U	28000 T	25000	U	10000000	100000		
1,4-Dichlorobenzene	UG/KG	28000	U	28000 1	J 25000	U	10000000	100000		
1,2-Dichlorobenzene	UG/KG	28000	U	28000 1	J 25000	U	10000000	50000		
2-Methylphenol	UG/KG	28000	U	28000 t	25000	U	10000000			
2,2'-Oxybis(1-Chloropropane)	UG/KG	28000	U	28000 1	25000	U	10000000			
4-Methylphenol	UG/KG	28000	U	28000 1	25000	U	10000000			
N-Nitrosodi-n-Propylamine	UG/KG	28000	U	28000 t	25000	U	660	100000		
Hexachloroethane	UG/KG	28000	U	28000 T	J 25000	U	100000	100000	1	
Nitrobenzene	UG/KG	28000	U	28000 I	J 25000	U	520000	10000		
Isophorone	UG/KG	28000	U	28000 1	J 25000	U	10000000	50000		
2-Nitrophenol	UG/KG	28000	U	28000 I	25000	U				
2,4-Dimethylphenol	UG/KG	28000	U	28000 T	25000	U	10000000		4	
Bis(2-Chloroethoxy) Methane	UG/KG	28000	U	28000 t	25000	U				
2,4-Dichlorophenol	UG/KG	28000	U	28000 T	25000	U	3100000	10000		H
1,2,4-Trichlorobenzene	UG/KG	28000	U	28000 t	25000	U	1200000	100000		
4-Chloroaniline	UG/KG	28000	U	28000 T	J 25000	U	4200000			
Hexachlorobutadiene	UG/KG	28000	U	28000 t	25000	U	21000	100000		
4-Chloro-3-Methylphenol	UG/KG	28000	U	28000 T	25000	U	10000000			
Hexachlorocyclopentadiene	UG/KG	28000	U	28000 T	25000	U	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	28000	U	28000 U	25000	U	270000	10000		
2,4,5-Trichlorophenol	UG/KG	140000	U	140000 t	120000	U	10000000	50000		

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION

Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		623720 66/06/ SLUD	013 '96	PKCSED17B 62372014 06/06/96 SLUDGE	62372014 06/06/96		E	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									from Long et. al.	Guidelines from Long et. al.
2-Chloronaphthalene	UG/KG	28000	U	28000	U	25000 I	U				
2-Nitroaniline	UG/KG	140000	U	140000	U	120000 U	U				
Dimethylphthalate	UG/KG	28000	U	28000	U	25000 I	U	10000000			
2,6-Dinitrotoluene	UG/KG	28000	U	28000	U	25000 U	U	0	6.		d -
3-Nitroaniline	UG/KG	140000	U	140000	U	120000 t	U				4
2,4-Dinitrophenol	UG/KG	140000	U	140000	U	120000 t	U	2100000	10000		
4-Nitrophenol	UG/KG	140000	U	140000	U	120000 t	U				
Dibenzofuran	UG/KG	28000	U	28000	U	25000 I	U				
2,4-Dinitrotoluene	UG/KG	28000	U	28000	U	25000 T	U		10000		
Diethylphthalate	UG/KG	9000	E	790000	E	4200 J		10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	28000	U	28000	U	25000 T	U				
4-Nitroaniline	UG/KG	140000	U	140000	U	120000 t	U				
4,6-Dinitro-2-Methylphenol	UG/KG	140000	U	140000	U	120000 T	U	0			
N-Nitrosodiphenylamine (1)	UG/KG	28000	U	87000		25000 T	U	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	28000	U	28000	U	25000 t	U				
Hexachlorobenzene	UG/KG	28000	U	28000	U	25000 T	U	2000	100000		
Pentachlorophenol	UG/KG	140000	U	140000	U	120000 1	U	24000	100000		
Carbazole	UG/KG	28000	U	28000	U	25000 I	U				
Di-n-Butylphthalate	UG/KG	28000	U	28000	U	25000 t	U	10000000	100000		
Butylbenzylphthalate	UG/KG	28000	U	28000	U	25000 T	U	10000000	100000		
3,3'-Dichlorobenzidine	UG/KG	28000	U	28000	U	25000	U	6000	100000		J. Committee
Bis(2-Ethylhexyl)Phthalate	UG/KG	93000		4400	J	25000 I	U	210000	100000		
Di-n-Octylphthalate	UG/KG	28000	U	28000	U	25000	U	10000000	100000		
Dibenz(a,h)Anthracene	UG/KG	28000	U	28000	U	25000	U	660	100000		1 -
Benzo(b)Fluoranthene	UG/KG	28000	U	7100	J	2600 J	I	4000	50000		
Benzo(k)Fluoranthene	UG/KG	28000	U	28000	U	25000 1	U	4000	500000		1

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE		PKCSED17B 62372014 06/06/96 SLUDGE	62372014 06/06/96		PKCSED17C 62372015 06/06/96 SLUDGE		Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									from Long et. al.	Guidelines from Long et. al.
Indeno(1,2,3-cd)Pyrene	UG/KG	28000	U	28000	U	25000	U	4000	500000		
Benzo(g,h,i)Perylene	UG/KG	28000	U	6300	J	25000	U	0			
Acenaphthylene	UG/KG	28000	U	28000	U	25000	U				
Naphthalene	UG/KG	5400	1	190000		54000		4200000	100000	160	2100
2-Methylnaphthalene	UG/KG	22000	J	500000	E	240000				70	670
Acenaphthene	UG/KG	6000	.1	20000	J	9300	J	10000000	100000	16	500
Fluorene	UG/KG	9000	J	65000		27000		10000000	100000	19	540
Phenanthrene	UG/KG	26000	1	120000		52000		0	100000	240	1500
Anthracene	UG/KG	6900	J	28000	J	13000	J	10000000	100000	85.3	1100
Fluoranthene	UG/KG	7600	J	12000	J	7500	J	10000000	100000	600	5100
Pyrene	UG/KG	9800	J	30000		14000	J	10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	4300	J	12000	1	7200	J	4000	500000	261	1600
Chrysene	UG/KG	5600	1	22000	1	8300	J	40000	50000	384	2800
Benzo(a)Pyrene	UG/KG	28000	U	7600	I	3800	J	660	100000	430	1600
SEMI-VOLATILE TICS						F 15 2					
Dimethyl Naphthalene Isomer	UG/KG	59000	1	200000	J	81000	J				-
Naphthalene, Trimethyl- Isomer	UG/KG	73000	1	150000	J	110000	J				
Unknown	UG/KG										- 1
Unknown Alkane	UG/KG	92000	J	240000	1	400000	J				
Unknown Aromatic	UG/KG				1	230000	1	-			
Unknown Cycloalkane	UG/KG	18000	J	460000	J	190000	J				A.
Unknown Pah	UG/KG	45000	J	120000	J					-	
Anthracene, Methyl- Isomer	UG/KG										
Decahydro-4,4,8,9,10- Pentamethylnap	UG/KG	38000	JN	190000	JN	7	I N		-		
Unknown Hydrocarbon	UG/KG					110000	J				

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE		PKCSED17I 62372014 06/06/96 SLUDGE	62372014 06/06/96		Direct Soil C	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									from Long et. al.	Guidelines from Long et. al.
Methyl Methylethyl Benzene Isomer	UG/KG	20000	J								
Naphthalene, Trimethyl Isomer	UG/KG										
Trimethyl Benzene Isomer	UG/KG			110000	J						
Tetramethyl Benzene Isomer	UG/KG								11.0		
9h-Fluorene, Methyl- Isomer	UG/KG								1		
Naphthalene, Ethyl- Isomer	UG/KG	31000	J	150000	J						
PESTICIDES/PCB's								0			
alpha BHC	UG/KG	48	U	220		77		0	/	7	
beta BHC	UG/KG	48	U	190	U	42 1	J	0			
delta BHC	UG/KG	41	J	520		42 T	J				
gamma BHC	UG/KG	48	U	190	U	42 1	J	0			
Heptachlor	UG/KG	48	U	240		42	J	650	50000	De la company	
Aldrin	UG/KG	48	U	190	_	58		170	50000		
Heptachlor epoxide	UG/KG	48	U	190	U	42 1	J				
Endosulfan I	UG/KG	48	U	190	U		J	0	50000		
Dieldrin	UG/KG	95	U	420		83	J	180	50000		
4,4'-DDE	UG/KG	95	U	1600		83	J	9000	50000		
Endrin	UG/KG	110		380	U	83	J	310000	50000		
Endosulfan II	UG/KG	95	U	380	U	83	J	6200000			
4,4'-DDD	UG/KG	380		1500	1	61	0	12000	50000		
Endosulfan sulfate	UG/KG	95	U	380	U	36					
4,4'-DDT	UG/KG	95	U	380	U		J	9000	1		
Methoxychlor	UG/KG	480	U	1900	U		J	5200000	50000		
Endrin ketone	UG/KG	95	U	380	U		U		1		
Endrin Aldehyde	UG/KG	95	U	240	1		U				
alpha-Chlordane	UG/KG	27	J	130	1	42	U				

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE	PKCSED17B 62372014 06/06/96 SLUDGE	PKCSED17C 62372015 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS				-		Guidelines from Long et. al.	Guidelines from Long et. al.
gamma-Chlordane	UG/KG	100	110 J	42 U				
Toxaphene	UG/KG	1900 U	7600 U	1700 U	200	50000		
Aroclor-1016	UG/KG	950 U	3800 U	830 U				
Aroclor-1221	UG/KG	950 U	3800 U	830 U			(= = = =	
Aroclor-1232	UG/KG	950 U	3800 U	830 U				
Aroclor-1242	UG/KG	950 U	3800 U	830 U				
Aroclor-1248	UG/KG	950 U	3800 U	830 U				
Aroclor-1254	UG/KG	950 U	3800 U	830 U				
Aroclor-1260	UG/KG	950 U	3800 U	830 U				
METALS								
Aluminum	MG/KG	18500	19000	21300	0			
Antimony	MG/KG	1 B	3.6 B	5 B	340			
Arsenic	MG/KG	29.5	128	194	20		8.2	70
Barium	MG/KG	195	341	175	47000			
Beryllium	MG/KG	1.2 B	1.5	1.5	1			
Cadmium	MG/KG	10	12.7	7.6	100		1,2	9.6
Calcium	MG/KG	4950	5760	4040	0			
Chromium	MG/KG	342	428	317	0		81	370
Cobalt	MG/KG	14.8	15.1	13.8	. 0			
Copper	MG/KG	1560	621	506	600		34	270
Iron	MG/KG	39000	48800	38600	0			
Lead	MG/KG	554	2020	2860	600		46.7	218
Magnesium	MG/KG	9080	9330	7550	0			
Manganese	MG/KG	368	483	359	0		ACT. FEE	
Mercury	MG/KG	8.3	8.7	9.1	270		0.15	0.71
Nickel	MG/KG	76	65.6	56.2	2400		20.9	51.6

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED17A 62372013 06/06/96 SLUDGE	PKCSED17B 62372014 06/06/96 SLUDGE	PKCSED17C 62372015 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)	
PARAMETERS	UNITS				1		from Long et. al.	Guidelines from Long et. al.	
Potassium	MG/KG	5170	4670	3670	0				
Selenium	MG/KG	2.9	6.2	9.2	3100				
Silver	MG/KG	9.6	10.6	5.5	4100		I I	3.7	
Sodium	MG/KG	13000	10900	8020	0				
Thallium	MG/KG	3.3	4.2	4.2	2		1		
Vanadium	MG/KG	74.6	66.3	69.4	7100		354		
Zinc	MG/KG	713	856	773	1500		150	410	

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE	PKCSED19B 62372005 06/06/96 SLUDGE	PKCSED19C 62372006 06/06/96 SLUDGE	PKCSED19D 62372007 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS							Guidelines from Long et. al.	Guidelines from Long et. al.
VOLATILES									
Chloromethane	UG/KG	150 U	6300 U	16000 U	16000 U	1000000	10000		
Bromomethane	UG/KG	150 U	6300 U	16000 U	16000 U	1000000	1000		
Vinyl Chloride	UG/KG	150 U	6300 U	16000 U	16000 U	7000	10000		
Chloroethane	UG/KG	150 U	6300 U	16000 U	16000 U	0			
Methylene Chloride	UG/KG	76 U	3300 U	8400 U	8200 U	210000	1000		4
Acetone	UG/KG	150 U	6300 U	16000 U	16000 U	1000000	100000		
Carbon Disulfide	UG/KG	76 U	3300 U	8400 U	8200 U				
1,1-Dichloroethene	UG/KG	76 U	3300 U	8400 U	8200 U	150000	10000		
1,1-Dichloroethane	UG/KG	76 U	3300 U	8400 U	8200 U	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	76 U	3300 U	8400 U	8200 U		50000		
Chloroform	UG/KG	76 U	3300 U	8400 U	8200 U	28000	1000		
1,2-Dichloroethane	UG/KG	76 U	3300 U	8400 U	8200 U	24000	1000		9
2-Butanone	UG/KG	150 U	6300 U	16000 U	16000 U	1000000	50000		
1,1,1-Trichloroethane	UG/KG	76 U	3300 U	8400 U	8200 U	1000000	50000		
Carbon Tetrachloride	UG/KG	76 U	3300 U	8400 U	8200 U	4000	1000		
Bromodichloromethane	UG/KG	76 U	3300 U	8400 U	8200 U	46000	1000		
1,2-Dichloropropane	UG/KG	76 U	3300 U	8400 U	8200 U	43000			
cis-1,3-Dichloropropene	UG/KG	76 U	3300 U	8400 U	8200 U	5000			
Trichloroethene	UG/KG	76 U	3300 U	8400 U	8200 U	54000	1000		
Dibromochloromethane	UG/KG	76 U	3300 U	8400 U	8200 U	1000000	1000	7	
1,1,2-Trichloroethane	UG/KG	76 U	3300 U	8400 U	8200 U	420000			- 1
Benzene	UG/KG	220	3300 U	8400 U	8200 U	13000			30
Trans-1,3-Dichloropropene	UG/KG	76 U	3300 U	8400 U	8200 U	5000			
Bromoform	UG/KG	76 U	3300 U	8400 U	8200 U	370000	1000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID; LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE	PKCSED19B 62372005 06/06/96 SLUDGE		PKCSED19C 62372006 06/06/96 SLUDGE	PKCSED19D 62372007 06/06/96 SLUDGE		D	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS		**								from Long et. al.	Guidelines from Long et. al.
4-Methyl-2-Pentanone	UG/KG	150 U	6300	U	16000 U	16000	U	ı	1000000	50000		
2-Hexanone	UG/KG	150 U	6300	Ü	16000 U	16000	U	1	-			
Tetrachloroethene	UG/KG	76 U	3300	U	8400 U	8200	U	I	6000			
Toluene	UG/KG	76 U	3300	U	18000	8200	U	J.	• 1000000	500000		
1,1,2,2-Tetrachloroethane	UG/KG	76 U	3300	U	8400 U	8200	U	1	70000	1000		
Chlorobenzene	UG/KG	76 U	3300	U	8400 U	8200	U	I	680000	1000		
Ethylbenzene	UG/KG	76 U	15000		32000	15000	, =		1000000	100000		-
Styrene	UG/KG	76 U	3300	U	8400 U	8200	U	1	97000	100000		
Total Xylenes	UG/KG	76 U	12000		220000	8200	U	J	1000000	10000		
VOLATILE TICS												
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG		150000	JN							5	
Cyclohexane, Methyl-	UG/KG	11	420000	JN	350000 JN	45000	0 J	N				
Unknown Cycloalkane	UG/KG	330 J	140000	J	380000 · J	42000	0 1					
1h-Indene, Dihydro-Methyl Isomer	UG/KG	1	150000	J	320000 J	18000	0 1					
Ethyl Dimethyl Benzene Isomer	UG/KG		140000	J	320000 J							
Ethylmethyl Benzene Isomer	UG/KG				200000 J	21000	0 J					
Unknown Alkane	UG/KG	450 J	34000	J	75000 J	48000	J	5.1				
Methyl Propyl Benzene Isomer	UG/KG	310 J										
Trimethyl Benzene Isomer	UG/KG	380 J			110000 J							1
1h-Indene, Dihydro-Dimethyl Isomer	UG/KG				210000 J				-			
Methyl Naphthalene Isomer	UG/KG				200000 J							
Naphthalene	UG/KG	30000 U	10000	J	200000 JN	11000	J		4200000	-	160	2100
Cyclohexane, 1-Ethyl-2-Methyl-, Cis- (8c	UG/KG					18000	0 1	N				
Pentalene, Octahydro-2-Methyl-	UG/KG				100 100	20000		N			V	
Diethyl Benzene Isomer	UG/KG					22000	0 J					

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE		PKCSED19 62372005 06/06/96 SLUDGE		PKCSED19C 62372006 06/06/96 SLUDGE	7.7	PKCSE 62372 06/06 SLUT	2007 5/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS	,										Guidelines from Long et. al.	Guidelines from Long et. al.
Methyl Methylethyl Benzene Isomer	UG/KG			37000	J								
Unknown Aromatic	UG/KG										1		
SEMI-VOLATILES										0			
Phenol	UG/KG	30000	U :	26000	U	2700 U	1	26000	U	• 10000000	50000		
Bis(2-Chloroethyl)Ether	UG/KG	30000	U	26000	U	27000 U	ī	26000	U	3000	10000		
2-Chlorophenol	UG/KG	30000	U	26000	U	27000 U	1	26000	U	5200000	10000		1-
1,3-Dichlorobenzene	UG/KG	30000	U	26000	U	27000 U	1	26000	U	10000000	100000		
1,4-Dichlorobenzene	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000	100000		
1,2-Dichlorobenzene	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000	50000		
2-Methylphenol	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000			
2,2'-Oxybis(1-Chloropropane)	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000			
4-Methylphenol	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000			
N-Nitrosodi-n-Propylamine	UG/KG	30000	U	26000	U	27000 U	J	26000	U	660	100000		
Hexachloroethane	UG/KG	30000	U	26000	U	27000 U	J	26000	U	100000	100000		
Nitrobenzene	UG/KG	30000	U	26000	U	27000 U	J.	26000	U	520000	10000		
Isophorone	UG/KG	30000	U	26000	U	49000	1	26000	U	10000000	50000		
2-Nitrophenol	UG/KG	30000	U	26000	U	27000 U	J	26000	U			-	
2,4-Dimethylphenol	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000			
Bis(2-Chloroethoxy) Methane	UG/KG	30000	_	26000	U	7-11-11-2		26000	U				
2,4-Dichlorophenol	UG/KG	30000	$\overline{}$	26000		27000 U	J	26000	U	3100000	10000		1
1,2,4-Trichlorobenzene	UG/KG	30000	U	26000	U	27000 U	Ţ	26000	U	1200000	100000		
4-Chloroaniline	UG/KG	30000	U	26000	U	27000 U		26000	U	4200000			
Hexachlorobutadiene	UG/KG	30000	U	26000	U	27000 U	J	26000	U	21000	100000		
4-Chloro-3-Methylphenol	UG/KG	30000	U	26000	U	27000 U	J	26000	U	10000000			
Hexachlorocyclopentadiene	UG/KG	30000	U	26000	_	27000 U		26000	U	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	30000	U	26000	U	27000 L	J	26000	U	270000	10000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE	PKCSED 6237200 06/06/9 SLUDG	6 6	PKCSEI 623720 06/06/ SLUD	006 /96	PKCSI 6237 06/0 SLUI	2007 6/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										from Long et. al.	Guidelines from Long et. al.
2,4,5-Trichlorophenol	UG/KG	150000 U	1 130000	U	140000	U	130000	U	10000000	50000		
2-Chloronaphthalene	UG/KG	30000 U	26000	U	27000	U	26000	U				
2-Nitroaniline	UG/KG	150000 t	130000	U	140000	U	130000	U				
Dimethylphthalate	UG/KG	30000 t	26000	U	27000	U	26000	U-	• 10000000			
2,6-Dinitrotoluene	UG/KG	30000 L	26000	U	27000	U	26000	U	0			
3-Nitroaniline	UG/KG	150000 L	130000	U	140000	U	130000	U				
2,4-Dinitrophenol	UG/KG	150000 U	130000	U	140000	U	130000	U	2100000	10000		
4-Nitrophenol	UG/KG	150000 t	1 130000	U	140000	U	130000	U	19			
Dibenzofuran	UG/KG	30000 U	26000	U	27000	U	26000	U				11-11-11
2,4-Dinitrotoluene	UG/KG	30000 U	26000	U	27000	U	26000	Ü		10000		-
Diethylphthalate	UG/KG	30000 t	26000	U	9900	J	26000	U	10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	30000 t		U		U	26000	U				1
4-Nitroaniline	UG/KG	150000 t	1 130000	U	140000	U	130000	U				
4,6-Dinitro-2-Methylphenol	UG/KG	150000 t	J 130000	U	140000	.U	130000	U	0			
N-Nitrosodiphenylamine (1)	UG/KG	30000 t	J 26000	U	27000	U	9200	1	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	30000 t	J 26000	U	27000	U	26000	U				
Hexachlorobenzene	UG/KG	30000 t	J 26000	U	27000	U	26000	U	2000	100000		
Pentachlorophenol	UG/KG	150000 t	J 130000	U	23 20 20 20 20	U	130000	U	24000	100000		
Carbazole	UG/KG	30000 t	J 26000	U	27000	U	26000	U		to the second		
Di-n-Butylphthalate	UG/KG	30000 I	J 26000	U		U	26000	U	10000000	100000		
Butylbenzylphthalate	UG/KG	30000 t	J 26000	U	-	U	26000	U	10000000	100000		
3,3'-Dichlorobenzidine	UG/KG	30000 t		U	27000	U	26000	U	6000	100000		
Bis(2-Ethylhexyl)Phthalate	UG/KG	22000 J	3500	J	4000	J	5500	J	210000	100000		
Di-n-Octylphthalate	UG/KG	-	J 26000	U	27000	U	26000	U	10000000	100000		
Dibenz(a,h)Anthracene	UG/KG	12,500	J 26000	U	-1000	U	26000	U	660	100000		
Benzo(b)Fluoranthene	UG/KG	30000 t	J 26000	U	49000	J	26000	U	4000	50000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE		PKCSED19 62372005 06/06/96 SLUDGE	В	PKCSED 6237200 06/06/9 SLUDG	06 06	6237 06/0	ED19D 72007 16/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS											from Long et. al.	Guidelines from Long et. al.
Benzo(k)Fluoranthene	UG/KG	30000 t	U 2	26000	U	27000	U	26000	U	4000	500000		
Indeno(1,2,3-cd)Pyrene	UG/KG	30000 t	U 2	26000	U	27000	U	26000	U	4000	500000		
Benzo(g,h,i)Perylene	UG/KG	30000 t	U 2	26000	U	3300	J	26000	U	0			
Acenaphthylene	UG/KG	30000 1	U 2	26000	U	260000		26000	U	13			
Naphthalene	UG/KG	30000 1	U 1	0000	1	260000	JN	11000	J	4200000	100000	160	2100
2-Methylnaphthalene	UG/KG	8900 J	3	31000		660000	E	34000				70	670
Acenaphthene	UG/KG	30000 I	U 2	26000	U	26000	J	26000	U	10000000	100000	16	500
Fluorene	UG/KG	30000 1	U 6	5000	1	75000		9200	J	10000000	100000	19	540
Phenanthrene	UG/KG	13000 J	1	1000	J	130000		20000	J	0	100000	240	1500
Anthracene	UG/KG	30000 1	U 3	3000 >	J	21000	J	3600	J	10000000	100000	85.3	1100
Fluoranthene	UG/KG	3600	1 2	26000	U	19000	J	4800	J	10000000	100000	600	5100
Pyrene	UG/KG	4200 J	1 2	2900	J	34000		6200	J	10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	30000	U 2	26000	U	16000	J	2900	J	4000	500000	261	1600
Chrysene	UG/KG	3400	J 2	26000	U	19000	J	3700	J	40000	500000	384	2800
Benzo(a)Pyrene	UG/KG	30000	U 2	26000	U	7000	J	26000	U	660	100000	430	1600

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE		PKCSED19 62372005 06/06/96 SLUDGE	В	PKCSE1 623720 06/06/ SLUD	006 /96	623° 06/0	ED19D 72007 06/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS											Guidelines from Long et. al.	Guidelines from Long et. al.
SEMI-VOLATILE TICS						27000	U	26000	U				-
Dimethyl Naphthalene Isomer	UG/KG	29000 J	J	38000	1								
Naphthalene, Trimethyl- Isomer	UG/KG	37000 J	J	38000	J								
Unknown	UG/KG	36000 J	J	43000	J	120000	J	58000	J	4			
Unknown Alkane	UG/KG	450 J	ı	34000	J	86000	J	54000	1				
Unknown Aromatic	UG/KG					85000	J	53000	1				
Unknown Cycloalkane	UG/KG	330 J	1	140000	J	75000	J	48000	J				
Unknown Pah	UG/KG	21000 J	J	28000	J								
Anthracene, Methyl- Isomer	UG/KG	22000 J	J			380000	J	420000	1	l b			
Decahydro-4,4,8,9,10- Pentamethylnap	UG/KG	24000 J	JN	45000	JN								
Unknown Hydrocarbon	UG/KG	21000 J	JN	1									
Methyl Methylethyl Benzene Isomer	UG/KG			37000	1			67000	JN				
Naphthalene, Trimethyl Isomer	UG/KG			46000	J	80000	J	46000	1	-			
Trimethyl Benzene Isomer	UG/KG	380 J	J										
Tetramethyl Benzene Isomer	UG/KG												
9h-Fluorene, Methyl- Isomer	UG/KG					110000	J	1					
Naphthalene, Ethyl- Isomer	UG/KG							50000	1			1	
PESTICIDES/PCB's										0			
alpha BHC	UG/KG	100	Ü	61		89	J	44	U	0			
beta BHC	UG/KG	100	-	44	-	90	U		U	0			
delta BHC	UG/KG	870		44	U	90	U	44	U				
gamma BHC	UG/KG	100	-	44	U	86	1	44	U	0			
Heptachlor	UG/KG	100	U	90		49	J	44	U	650	50000		
Aldrin	UG/KG	7.0.2	-	44		17	J	44	Ü	170	50000		
Heptachlor epoxide	UG/KG	100	U	14	1	90	U	44	U				

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE	(3	PKCSED19B 62372005 06/06/96 SLUDGE	62	CSED19C 2372006 6/06/96 LUDGE		CCSED19D 62372007 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										from Long et. al.	Guidelines from Long et. al.
Endosulfan I	UG/KG	100 U	44	U	90	U	44	U	0	50000		
Dieldrin	UG/KG	200 U	88	U	180	U	88	U	180	50000	1-	
4,4'-DDE	UG/KG	200 U	770)	560		720		9000	50000		
Endrin	UG/KG	200 U	88	U	180	U	88	U	• 310000	50000		
Endosulfan II	UG/KG	200 U	88	U	180	U	88	U	6200000			
4,4'-DDD	UG/KG	360	360)	590		670		12000	50000		
Endosulfan sulfate	UG/KG	200 U	88	U	180	U	18	1				
4,4'-DDT	UG/KG	200 U	88	U	110	J	88	U	9000	50000		
Methoxychlor	UG/KG	1000 U	440	U C	900	U	440	U	5200000	50000		
Endrin ketone	UG/KG	200 U	31	J	180	U	59	J.				
Endrin Aldehyde	UG/KG	200 U	88	U	180	U	88	U				
alpha-Chlordane	UG/KG	140	49		90	U	71				7	
gamma-Chlordane	UG/KG	100 U	48		90	U	-					
Toxaphene	UG/KG	4000 U	77.7	-	3600	U		U	200	50000		
Aroclor-1016	UG/KG	2000 U			1800	U	880	U				
Aroclor-1221	UG/KG	2000 U	4 100		1800	U	880	U				
Aroclor-1232	UG/KG	2000 U	-			U	880	U				
Aroclor-1242	UG/KG	2000 U			1800	U	880	U			1 1	
Aroclor-1248	UG/KG	2000 U	-		-	U	10.00	U				
Aroclor-1254	UG/KG	2000 U	880	U	1800	U	880	U				
Aroclor-1260	UG/KG	2000 U	880	U	1800	U	880	U				
METALS									1			
Aluminum	MG/KG	16100		16000		16500		16000	0			
Antimony	MG/KG	2.3 B		1.9 B		2.6 B		2 B	340			
Arsenic	MG/KG	44.9		54.4		80.6		76	20		8.2	70
Barium	MG/KG	276		224	-	240		225	47000			

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION

Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED19A 62372004 06/06/96 SLUDGE	PKCSED19B 62372005 06/06/96 SLUDGE	PKCSED19C 62372006 06/06/96 SLUDGE	PKCSED19D 62372007 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS							from Long et. al.	Guidelines from Long et. al.
Beryllium	MG/KG	1.1 B	1.2 B	1.2 B	1.2 B	. 1			
Cadmium	MG/KG	12.8	10.1	9.9	9.8	100		1.2	9.6
Calcium	MG/KG	5600	5740	4620	5490	0			
Chromium	MG/KG	431	428	435	395	. 0		81	370
Cobalt	MG/KG	15.5	13.4	13.4 B	13.1 B	0			
Copper	MG/KG	935	541	605	543	600		34	270
Iron	MG/KG	39500	42400	40200	41400	0			
Lead	MG/KG	798	844	1120	1050	600		46.7	218
Magnesium	MG/KG	8830	8330	7950	8210	0			
Manganese	MG/KG	357	421	388	403	.0	1- 1		
Mercury	MG/KG	9.2	6.7	8.7	7.6	270		0.15	0.71
Nickel	MG/KG	104	71.8	64.2	67.6	2400		20.9	51.6
Potassium	MG/KG	4400	4200	3970	4180	0			
Selenium	MG/KG	3.3	4.5	5	5.5	3100	•		
Silver	MG/KG	10.6	10.2	9.9	9.2	4100		1	3.7
Sodium	MG/KG	13500	10200	8700	10400	0			
Thallium	MG/KG	3.6	3	3.5	3.7	2		1	1.1
Vanadium	MG/KG	86.7	70.8	57.4	62.1	7100			
Zinc	MG/KG	832	675	798	753	1500		150	410

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: AB ID: AMPLING DATE: MATRIX:		PKCSE 62372 06/06 SLUI	001 6/96	623° 06/	SED21B 72002 06/96 DGE	623° 06/0	ED21C 72003 06/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM) Guidelines
PARAMETERS	UNITS									from Long et. al.	from Long et. al.
VOLATILES											
Chloromethane	UG/KG	3300	U	6500	U	6300	Ü	1000000	10000		
Bromomethane	UG/KG	3300	U	6500	U	6300	U	1000000	1000		
Vinyl Chloride	UG/KG	3300	U	6500	U	6300	U	7000	10000		
Chloroethane	UG/KG	3300	U	6500	U	6300	U				
Methylene Chloride	UG/KG	1700	U	3400	U	3300	U	210000	1000		
Acetone	UG/KG	3300	U	6500	U	6300	U	1000000	100000		
Carbon Disulfide	UG/KG	1700	U	3400	U	3300	U				
1,1-Dichloroethene	UG/KG	1700	U	3400	U	3300	U	150000	10000		
1,1-Dichloroethane	UG/KG	1700	U	3400	U	3300	U	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	1700	U	3400	U	3300	U		50000		
Chloroform	UG/KG	1700	U	3400	U	3300	U	28000	1000		
1,2-Dichloroethane	UG/KG	1700	U	3400	U	3300	U	24000	1000 .		
2-Butanone	UG/KG	3300	U	6500	U	6300	U	1000000			
1,1,1-Trichloroethane	UG/KG	1700	U	3400	U	3300	U	1000000			
Carbon Tetrachloride	UG/KG	1700	U	3400	U	3300	U	4000	-		
Bromodichloromethane	UG/KG	1700	U	3400	U	3300	U	46000	1000		
1,2-Dichloropropane	UG/KG	1700	U	3400	U	3300	U	43000			
cis-1,3-Dichloropropene	UG/KG	1700	U	3400	U	3300	U	5000			
Trichloroethene	UG/KG	1700	U	3400	U	3300	U	54000			
Dibromochloromethane	UG/KG	1700	U	3400	U	3300	U	1000000			
1,1,2-Trichloroethane	UG/KG	1700	U	3400	U	3300	U	420000			
Benzene	UG/KG	1700	U	3400	U	3300	U	13000			
Trans-1,3-Dichloropropene	UG/KG	1700	U	3400	U	3300	U	5000			
Bromoform	UG/KG	1700	U	3400	U	3300	U	370000	1000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED 623720 06/06/9 SLUDO	01 96	6237 06/0 SLU	2002 6/96	PKCSE 62372 06/06 SLUI	003 796	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	222	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									Guidelines from Long et. al.	Guidelines from Long et. al.
4-Methyl-2-Pentanone	UG/KG	3300	U	6500	U	6300	U	1000000	50000		
2-Hexanone	UG/KG	3300	U	6500	U	6300	U		3,033,3		
Tetrachloroethene	UG/KG	1700	U	3400	U	3300	U	6000			
Toluene	UG/KG	1700	Ū	3400	U	22000		1000000	500000		
1,1,2,2-Tetrachloroethane	UG/KG	1700	U	3400	U	3300	U	70000	1000		
Chlorobenzene	UG/KG	1700	U	3400	U	3300	U	680000	1000		
Ethylbenzene	UG/KG	5700		36000		22000		1000000	100000		
Styrene	UG/KG	1700	U	3400	U	3300	U	97000	100000		
Total Xylenes	UG/KG	4600		150000		150000		1000000	10000		
VOLATILE TICS											
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG	80000	JN	-		120000	JN	1			
Cyclohexane, Methyl-	UG/KG	140000	JN	270000	JN						
Unknown Cycloaikane	UG/KG	64000	J	120000	J	260000	J				
1h-Indene, Dihydro-Methyl Isomer	UG/KG	64000	J	120000	J	150000	J				
Ethyl Dimethyl Benzene Isomer	UG/KG	64000	J	120000	1	150000	J				1 - 1
Ethylmethyl Benzene Isomer	UG/KG	64000	J	140000	J	110000	J			1	
Unknown Alkane	UG/KG	64000	J	120000	1	190000	1				
Methyl Propyl Benzene Isomer	UG/KG	64000	J	1							
Trimethyl Benzene Isomer	UG/KG	64000	J			-					
1h-Indene, Dihydro-Dimethyl Isomer	UG/KG	64000	1								
Methyl Naphthalene Isomer	UG/KG	64000	J								
Naphthalene	UG/KG	200000	JN	90000		61000		4200000		160	2100
Cyclohexane, 1-Ethyl-2-Methyl-, Cis- (8c	UG/KG	180000	JN	5		()				1 7 7	
Pentalene, Octahydro-2-Methyl-	UG/KG	200000	JN								
Diethyl Benzene Isomer	UG/KG	64000	J								
Methyl Methylethyl Benzene Isomer	UG/KG	64000	J								

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc., Bayonne, New Jersey TABLE 3:

CLIENT ID: AB ID: AMPLING DATE: MATRIX:		PKCSE 62372 06/06 SLUD	001 /96	6237 06/0	ED21B 72002 06/96 DGE	PKCS 6237 06/0 SLU	2003	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	
PARAMETERS	UNITS									Guidelines from Long et. al.	Guidelines from Long et. al.
Unknown Aromatic	UG/KG	64000	J								
SEMI-VOLATILES		100						0			
Phenol	UG/KG	28000	U	27000	U	26000	U	10000000	50000		
Bis(2-Chloroethyl)Ether	UG/KG	28000	U	27000	U	26000	Ú	3000	10000		
2-Chlorophenol	UG/KG	28000	U	27000	U	26000	U	5200000	10000		
1,3-Dichlorobenzene	UG/KG	5500	J	27000	U	26000	U	10000000	100000		
1,4-Dichlorobenzene	UG/KG	28000	U	27000	U	26000	U	10000000	100000		
1,2-Dichlorobenzene	UG/KG	28000	U	27000	U	26000	U	10000000	50000		
2-Methylphenol	UG/KG	28000	U	27000	U	26000	U	10000000			
2,2'-Oxybis(1-Chloropropane)	UG/KG	28000	U	27000	U	26000	U	10000000			
4-Methylphenol	UG/KG	28000	U	27000	U	26000	U	10000000			
N-Nitrosodi-n-Propylamine	UG/KG	28000	U	27000	U	26000	U	660	100000		
Hexachloroethane	UG/KG	28000	U	27000	U	26000	U	100000	100000		1
Nitrobenzene	UG/KG	28000	U	27000	U	26000	U	520000	10000		
Isophorone	UG/KG	28000	U	27000	U	26000	U	10000000	50000	+	
2-Nitrophenol	UG/KG	28000	U	27000	U	26000	U				
2,4-Dimethylphenol	UG/KG	28000	U	27000	U	26000	U	10000000			
Bis(2-Chloroethoxy) Methane	UG/KG	28000	U	27000	U	26000	U				
2,4-Dichlorophenol	UG/KG	28000	U	27000	U	26000	U	3100000	10000		
1,2,4-Trichlorobenzene	UG/KG	28000	U	27000	U	26000	U	1200000	100000		
4-Chloroaniline	UG/KG	28000	U	27000	U	26000	U	4200000			
Hexachlorobutadiene	UG/KG	28000	U	27000	U	26000	U	21000	100000	7	
4-Chloro-3-Methylphenol	UG/KG	28000	U	27000	U	26000	U	10000000	+		
Hexachlorocyclopentadiene	UG/KG	28000	U	27000	U	26000	U	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	28000	U	27000	U	26000	U	270000	10000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSEI 623720 06/06/9 SLUDO	01 96	PKCSI 62372 06/06 SLUI	2002 6/96	9KCSE 62372 06/06 SLUI	003 5/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	1	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									Guidelines from Long et. al.	Guidelines from Long et, al.
2,4,5-Trichlorophenol	UG/KG	140000	U	140000	U	130000	U	10000000	50000		
2-Chloronaphthalene	UG/KG	28000	U	27000	U	26000	U				
2-Nitroaniline	UG/KG	140000	U	140000	U	130000	U		-		
Dimethylphthalate	UG/KG	28000	U	27000	U	26000	U	10000000			
2,6-Dinitrotoluene	UG/KG	28000	U	27000	U	26000	U	0			
3-Nitroaniline	UG/KG	140000	U	140000	U	130000	U				
2,4-Dinitrophenol	UG/KG	140000	U	140000	U	130000	U	2100000	10000		
4-Nitrophenol	UG/KG	140000	U	140000	U	130000	U				
Dibenzofuran	UG/KG	28000	U	28000		23000	J			V -	
2,4-Dinitrotoluene	UG/KG	28000	U	27000	U	26000	U		10000		
Diethylphthalate	UG/KG	28000	U	27000	U	26000	U	10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	28000	U	27000	U	26000	U				
4-Nitroaniline	UG/KG	140000	U	140000	U	130000	U				
4,6-Dinitro-2-Methylphenol	UG/KG	140000	U	140000	U	130000	U	0			
N-Nitrosodiphenylamine (1)	UG/KG	28000	U	27000	U	26000	U	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	28000	U	27000	U	26000	U				
Hexachlorobenzene	UG/KG	28000	U	27000	U	26000	U	2000	100000		
Pentachlorophenol	UG/KG	140000	U	140000	U	130000	U	24000	100000		
Carbazole	UG/KG	15000	J	14000	J	26000	U				
Di-n-Butylphthalate	UG/KG	28000	U	27000	U	26000	U	10000000	100000		
Butylbenzylphthalate	UG/KG	28000	U	27000	U	26000	U	10000000	100000	1	
3,3'-Dichlorobenzidine	UG/KG	28000	U	27000	U	26000	U	6000	100000		
Bis(2-Ethylhexyl)Phthalate	UG/KG	21000	1	27000	U	26000	U	210000	100000		
Di-n-Octylphthalate	UG/KG	28000	U	27000	U	26000	U	10000000	100000		
Benzo(b)Fluoranthene	UG/KG	9400	1	11000	J	4600	1	4000	-		
Benzo(k)Fluoranthene	UG/KG	4800	J	27000	U	26000	U	4000	50000		

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation

Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey

LIENT ID: AB ID: AMPLING DATE: IATRIX:		PKCSE 62372 06/06 SLUI	2001 5/96	6237 06/0	ED21B 22002 66/96 DGE	PKCSI 6237 06/0 SLU	2003 6/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria		EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									Guidelines from Long et. al.	Guidelines from Long et. al.
Indeno(1,2,3-cd)Pyrene	UG/KG	28000	U	27000	U	26000	U	4000	500000		
Benzo(g,h,i)Perylene	UG/KG	4600	1	3800	J	2900	J	0	500000		
Acenaphthylene	UG/KG	28000	U	27000	U	26000	U				
Naphthalene	UG/KG	69000		90000		61000		4200000		160	2100
2-Methylnaphthalene	UG/KG	320000		340000		260000	1		100000	70	670
Acenaphthene	UG/KG	42000		27000	U	12000	J	10000000		16	500
Fluorene	UG/KG	88000		54000		31000		10000000	100000	19	540
Phenanthrene	UG/KG	250000		110000		48000		0	100000	240	1500
Anthracene	UG/KG	49000		23000	1	10000	J	10000000	100000	85.3	1100
Fluoranthene	UG/KG	44000		43000		9400	J	10000000	100000	600	5100
Pyrene	UG/KG	78000		38000		14000	J	10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	24000	J	16000	J	6400	J	4000	100000	261	1600
Chrysene	UG/KG	41000		18000	J	9700	1	40000	.500000	384	2800
Benzo(a)Pyrene	UG/KG	10000	J	9800	J	4200	J	660	500000	430	1600
Dibenz(a,h)Anthracene	UG/KG	28000	U	27000	U	26000	U	660	100000	100	
SEMI-VOLATILE TICS										1	
Dimethyl Naphthalene Isomer	UG/KG	5.3	J	140000	J						
Naphthalene, Trimethyl- Isomer	UG/KG	5.3	J	120000	J						
Unknown	UG/KG	5.3	1	140000	J						
Unknown Alkane	UG/KG	5.3	1	120000	J	190000	J			-	
Unknown Aromatic	UG/KG	5.3	J	1000						1 7	
Unknown Cycloalkane	UG/KG	5.3	J	120000	J	260000	J				
Unknown Pah	UG/KG	5.3	J								
Anthracene, Methyl- Isomer	UG/KG	5.3	J								
Decahydro-4,4,8,9,10- Pentamethylnap	UG/KG	65	JN								

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		6237 06/0	ED21A 2001 6/96 DGE	623 06/	SED21B 72002 06/96 JDGE	623 06	SED21C 372003 /06/96 UDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									from Long et. al.	Guidelines from Long et. al.
Unknown Hydrocarbon	UG/KG	5.3	J								
Methyl Methylethyl Benzene Isomer	UG/KG	5,3	J								
Naphthalene, Trimethyl Isomer	UG/KG	5.3	J								
Trimethyl Benzene Isomer	UG/KG	5.3	1								
Tetramethyl Benzene Isomer	UG/KG	5.3	J								
9h-Fluorene, Methyl- Isomer	UG/KG	5.3	1	1							
Naphthalene, Ethyl- Isomer	UG/KG	5.3	J								
PESTICIDES/PCB's		16						0			
alpha BHC	UG/KG	92	U	90	U	54		0			
beta BHC	UG/KG	92	U	90	U	44	U	0			
delta BHC	UG/KG	200		90	U	44	U				
gamma BHC	UG/KG	92	U	55	J	44	U	_ 0			
Heptachlor	UG/KG	92	U	90	U	44	U	650	50000		
Aldrin	UG/KG	92	U	90	U	23	J	170	50000	11	
Heptachlor epoxide	UG/KG	92	U	90	U	44	U				
Endosulfan I	UG/KG	92	U	90	U	44	U	0	50000		
Dieldrin	UG/KG	180	U	300		170		180	50000		
4,4'-DDE	UG/KG	180	U	550		28	J	900	50000		
Endrin	UG/KG	130	1	180	U	88	U	310000			
Endosulfan II	UG/KG	180	U	180	U	88	U	6200000			
4,4'-DDD	UG/KG	1500		710		51	J	12000	50000		
Endosulfan sulfate	UG/KG	220		21	J	20	1				
4,4'-DDT	UG/KG	180	U	180	U	34	J	9000			
Methoxychlor	UG/KG	920	U	900	U	440	U	5200000	50000	1	
Endrin ketone	UG/KG	180	U	34	1	88	U				
Endrin Aldehyde	UG/KG	180	U	180	U	88	U				

CLIENT ID: AB ID: AMPLING DATE: IATRIX:		PKCSED21A 62372001 06/06/96 SLUDGE	PKCSED21B 62372002 06/06/96 SLUDGE	PKCSED21C 62372003 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	
PARAMETERS	UNITS						Guidelines from Long et. al.	Guidelines from Long et. al.
alpha-Chlordane	UG/KG	170	90 U	44 U				
gamma-Chlordane	UG/KG	310	73 J	36 J				
Toxaphene	UG/KG	3700 U	3600 U	1800 U	200	50000		
Aroclor-1016	UG/KG	1800 U	1800 U	880 U	1.0			
Aroclor-1221	UG/KG	1800 U	1800 U	880 U				
Aroclor-1232	UG/KG	1800 U	1800 U	880 U			M	
Aroclor-1242	UG/KG	1800 U	1800 U	880 U				
Aroclor-1248	UG/KG	1800 U	1800 U	880 U				
Aroclor-1254	UG/KG	1800 U	1800 U	880 U				
Aroclor-1260	UG/KG	1800 U	1800 U	880 U				1
METALS					0			
Aluminum	MG/KG	17300	18200	24600	0			
Antimony	MG/KG	3.2 B	1.7 B	2 B	340			
Arsenic	MG/KG	126	82.4	167	20		8.2	70
Barium	MG/KG	543	208	217	47000			
Beryllium	MG/KG	1.1 B	1.3	1.9	1			
Cadmium	MG/KG	13.1	9.6	5.8	100		1.2	9.6
Calcium	MG/KG	6730	5040	3580				
Chromium	MG/KG	528	457	295	.0		81	370
Cobalt	MG/KG	19.7	13.2 B	13.5				
Copper	MG/KG	1120	546	407	600		34	270
Iron	MG/KG	51800	65200	37000	,0			
Lead	MG/KG	1860	1080	1740	600		46.7	218
Magnesium	MG/KG	7860	8000	7470				
Manganese	MG/KG	373	473	323	0		375	
Mercury	MG/KG	6.4	7.6	7.3	270		0.15	0.71

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED21A 62372001 06/06/96 SLUDGE	PKCSED21B 62372002 06/06/96 SLUDGE	PKCSED21C 62372003 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM) Guidelines
PARAMETERS UNIT							from Long et. al.	from Long et. al.
Nickel	MG/KG	102	61.8	50	2400		20.9	51,6
Potassium	MG/KG	4150	4420	3840				
Selenium	MG/KG	4.1	7	7.1	3100			
Silver	MG/KG	10.5	9.7	5	4100		1	3.7
Sodium	MG/KG	11300	9830	7860	0		V ()	
Thallium	MG/KG	4.1	4.1	4.3	2			
Vanadium	MG/KG	138	82.1	70.8	7100			
Zinc	MG/KG	918	718	632	1500		150	410

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		62372 06/06	PKCSED23A 62372008 06/06/96 SLUDGE		PKCSED23B 62372009 06/06/96 SLUDGE		ED23C 2010 66/96 DGE	6237 06/0	ED23D 2011 6/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
VOLATILES	-	1			-	-							
Chloromethane	UG/KG	6700	U	67000	U	33000	U	33000	U	1000000	10000		
Bromomethane	UG/KG	6700	U	67000	U	33000	U	33000	U	1000000	1000		
Vinyl Chloride	UG/KG	6700	U	67000	U	33000	U	33000	U	7000	10000		
Chloroethane	UG/KG	6700	U	67000	U	33000	U	33000	U				
Methylene Chloride	UG/KG	3400	U	34000	U	17000	U	17000	U	210000	1000		-
Acetone	UG/KG	6700	U	67000	U	33000	U	33000	U	1000000	100000		
Carbon Disulfide	UG/KG	3400	U	34000	U	17000	U	17000	U				W
1,1-Dichloroethene	UG/KG	3400	U	34000	U	17000	U	17000	U	150000	10000		
1,1-Dichloroethane	UG/KG	3400	U	34000	U	17000	U	17000	U	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	3400	U	34000	U	17000	U	17000	U		50000		
Chloroform	UG/KG	3400	U	34000	U	17000	U	17000	U	28000	1000		
1,2-Dichloroethane	UG/KG	3400	Ü	34000	U	17000	U	17000	U	24000	1000		
2-Butanone	UG/KG	6700	U	67000	U	33000	U	33000	U	1000000	50000	*	
1,1,1-Trichloroethane	UG/KG	3400	U	34000	U	17000	U	17000	U	1000000	50000		
Carbon Tetrachloride	UG/KG	3400	U	34000	U	17000	U	17000	U	4000	1000		
Bromodichloromethane	UG/KG	3400	U	34000	U	17000	U	17000	U	46000	1000		
1,2-Dichloropropane	UG/KG	3400	U	34000	U	17000	U	17000	U	43000		×	
cis-1,3-Dichloropropene	UG/KG	3400	U	34000	U	17000	U	17000	U	5000	1000		
Trichloroethene	UG/KG	3400	U	34000	U	17000	U	17000	U	54000	1000		
Dibromochloromethane	UG/KG	3400	U	34000	U	17000	U	17000	U	1000000	1000		
1,1,2-Trichloroethane	UG/KG	3400	U	34000	U	17000	U	17000	U	420000	1000		
Benzene	UG/KG	3400	U	34000	U	17000	U	17000	U	13000	1000		
Trans-1,3-Dichloropropene	UG/KG	3400	U	34000	U	17000	U	17000	U	5000			-21
Bromoform	UG/KG	3400	U	34000	U	17000	U	17000	U	370000	1000		
4-Methyl-2-Pentanone	UG/KG	6700	U	67000	U	33000	U	33000	U	1000000	50000		
2-Hexanone	UG/KG	6700	U	67000	U	33000	U	33000	U				

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED23A 62372008 06/06/96 SLUDGE		623720 06/06/	PKCSED23B 62372009 06/06/96 SLUDGE		D23C 2010 5/96 DGE	PKCSH 62372 06/00 SLUI	2011 6/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL) Guidelines from	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										Criteria	Long et, al.	Guidelines from Long et. al.
Tetrachloroethene	UG/KG	3400	U	34000	U	17000	U	17000	U	6000			
Toluene	UG/KG	3400	U	54000		32000		40000		1000000	500000		
1,1,2,2-Tetrachloroethane	UG/KG	3400	U	34000	U	17000	U	17000	U	70000	1000		
Chlorobenzene	UG/KG	7700		34000	U		U	17000	U	680000	1000		
Ethylbenzene	UG/KG	14000		63000		32000		48000		1000000	100000		
Styrene	UG/KG	3400	U	34000	U	17000	U	17000	U	97000	100000		
Total Xylenes	UG/KG	20000		500000		230000	-	390000		1000000	10000		
VOLATILE TICS													
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG					250000	N						
Cyclohexane, Methyl-	UG/KG	250000	JN			330000	JN	330000	JN				
Unknown Cycloalkane	UG/KG	200000	J	670000	1	580000	J	420000	1		1		
1h-Indene, Dihydro-Methyl Isomer	UG/KG	130000	1					300000	J			L C	
Ethyl Dimethyl Benzene Isomer	UG/KG	120000	J.			260000	j	560000	J				
Ethylmethyl Benzene Isomer	UG/KG	94000	1	640000	J	230000	1	580000	J				
Unknown Alkane	UG/KG	100000	1	440000	1	580000	J	130000	j				
Methyl Propyl Benzene Isomer	UG/KG					2 ==		300000	J				
Trimethyl Benzene Isomer	UG/KG			830000	J	260000	J	190000	J				
1h-Indene,Dihydro-Dimethyl Isomer	UG/KG					1 =							
Methyl Naphthalene Isomer	UG/KG												
Naphthalene	UG/KG	11000	1	70000		70000		180000		4200000	+	160	2100
Cyclohexane, 1-Ethyl-2-Methyl-, Cis- (8c	UG/KG			1 42 100									
Pentalene, Octahydro-2-Methyl-	UG/KG	120000	1N	-									1
Diethyl Benzene Isomer	UG/K.G												
Methyl Methylethyl Benzene Isomer	UG/KG			670000	J			280000	1				
Unknown Aromatic	UG/KG												
SEMI-VOLATILES	7-3-									0	-		
Phenol	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	50000		

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED23/ 62372008 06/06/96 SLUDGE		PKCSED23B 62372009 06/06/96 SLUDGE		62372 06/06	PKCSED23C 62372010 06/06/96 SLUDGE		ED23D 2011 5/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	the firm of the same of the sa	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Bis(2-Chloroethyl)Ether	UG/KG	28000	U	28000	U	28000	Ü	28000	U	3000	10000		
2-Chlorophenol	UG/KG	28000	U	28000	U	28000	u	. 28000	U	5200000		138	
1,3-Dichlorobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000			
1,4-Dichlorobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	100000		
1.2-Dichlorobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	50000		
2-Methylphenol	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000			
2,2'-Oxybis(1-Chloropropane)	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000			
4-Methylphenol	UG/KG	28000	U	28000	U	28000	U	28000	Ü	10000000	D		
N-Nitrosodi-n-Propylamine	UG/KG	28000	U	28000	U	28000	U	28000	Ú	660			
Hexachloroethane	UG/KG	28000	U	28000	U	28000	U	28000	U	100000	100000		
Nitrobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	520000			
Isophorone	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	50000		
2-Nitrophenol	UG/KG	28000	U	28000	U	28000	U	28000	U				
2,4-Dimethylphenol	UG/KG	28000	U	28000	U	28000	Ü	28000	U	10000000			
Bis(2-Chloroethoxy) Methane	UG/KG	28000	U	28000	U	28000	U	28000	U				
2,4-Dichlorophenol	UG/KG	28000	U	28000	U	28000	U	28000	U	3100000	10000		*1
1,2,4-Trichlorobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	1200000	100000		
4-Chloroaniline	UG/KG	28000	U	28000	U	28000	U	28000	U	4200000	7	1	
Hexachlorobutadiene	UG/KG	28000	U	28000	U	28000	U	28000	U	21000	100000		
4-Chloro-3-Methylphenol	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000			
Hexachlorocyclopentadiene	UG/KG	28000	U	28000	U	28000	U	28000	U	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	28000	U	28000	U	28000	U	28000	U	270000	10000		
2,4,5-Trichlorophenol	UG/KG	140000	U	140000	U	140000	U	140000	U	10000000	50000		
2-Chloronaphthalene	UG/KG	28000	U	28000	U	28000	U	28000	U				
2-Nitroaniline	UG/KG	140000	U	140000	U	140000	U	140000	U.			*	
Dimethylphthalate	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000			
2,6-Dinitrotoluene	UG/KG	28000	U	28000	U	28000	U	28000	U	0			

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED23A 62372008 06/06/96 SLUDGE		PKCSED23B 62372009 06/06/96 SLUDGE		62372 06/06	PKCSED23C 62372010 06/06/96 SLUDGE		ED23D 2011 5/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
3-Nitroaniline	UG/KG	140000	U	140000	U	140000	U	140000	U				
2,4-Dinitrophenol	UG/KG	140000	U	140000	U	140000	U	140000	U	2100000	10000		
4-Nitrophenol	UG/KG	140000	U	140000	U	140000	U	140000	U	2100000	10000		
Dibenzofuran	UG/KG	28000	U	28000	U	28000	U	28000	U				
2,4-Dinitrotoluene	UG/KG	28000	U	28000	U	28000	U	28000	U		10000		
Diethylphthalate	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	28000	U	28000	U	28000	U	28000	U		2 3432		
4-Nitroaniline	UG/KG	140000	U	140000	U	140000	U	140000	U		1		
4.6-Dinitro-2-Methylphenol	UG/KG	140000	U	140000	U	140000	U	140000	U	0			
N-Nitrosodiphenylamine (1)	UG/KG	28000	U	28000	U	28000	U	28000	U	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	28000	U	28000	U	28000	U	28000	U				
Hexachlorobenzene	UG/KG	28000	U	28000	U	28000	U	28000	U	2000	100000		-
Pentachlorophenol	UG/KG	140000	U	140000	U	140000	U	140000	U	24000	100000		
Carbazole	UG/KG	28000	U	28000	U	28000	U	28000	U				
Di-n-Butylphthalate	UG/KG	28000	U	28000	U	5000	J	28000	U	10000000	100000		
Butylbenzylphthalate	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	100000		
3,3'-Dichlorobenzidine	UG/KG	28000	U	28000	U	28000	U	28000	U	6000	100000		
Bis(2-Ethylhexyl)Phthalate	UG/KG	8000	J	28000	U	28000	U	5800	1	210000	100000		
Di-n-Octylphthalate	UG/KG	28000	U	28000	U	28000	U	28000	U	10000000	100000		
Benzo(b)Fluoranthene	UG/KG	28000	U	28000	U	6100	1	9500	J	4000	100000	/	
Benzo(k)Fluoranthene	UG/KG	28000	U	2900	J	28000	U	3100	J	4000	50000		
Indeno(1,2,3-cd)Pyrene	UG/KG	28000	U	28000	U	28000	U	28000	U	4000	500000	4	
Benzo(g,h,i)Perylene	UG/KG	28000	U	28000	U	3100	1	7600	J	0	500000		
Acenaphthylene	UG/KG	28000	U	28000	U	28000	U	28000	U				
Naphthalene	UG/KG	11000	J	70000		70000		180000		4200000		160	2100
2-Methylnaphthalene	UG/KG	31000		260000		340000		530000	E		100000	70	670
Acenaphthene	UG/KG	6800	J	13000	J	10000	J	23000	J	10000000		16	500

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation TABLE 3:

Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSE 62372 06/06 SLUD	008 /96	PKCSED 6237200 06/06/9 SLUDG	09 06	PKCSH 62372 06/00 SLUI	2010 6/96	PKCSE 62372 06/00 SLUI	2011 6/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS										Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Fluorene	UG/KG	9900	J	38000		46000		77000		10000000	100000	19	540
Phenanthrene	UG/KG	26000	1	58000		61000		130000		0	100000	240	1500
Anthracene	UG/KG	4600	J	8300	J	12000	J	36000		10000000	100000	85.3	1100
Fluoranthene	UG/KG	4700	J	8400	J	12000	J	17000	J	10000000	100000	600	5100
Pyrene	UG/KG	7100	J	14000	J	20000	J	38000		. 10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	28000	U	5700	J	10000	J	14000	j	4000	100000	261	1600
Chrysene	UG/KG	4300	J	10000	1	11000	J	23000	J	40000	500000	384	2800
Benzo(a)Pyrene	UG/KG	28000	U	3800	J	5500	J	10000	J	660	500000	430	1600
Dibenz(a,h)Anthracene	UG/KG	28000	U	28000	U	28000	U	28000	U	660	100000		
SEMI-VOLATILE TICS								1					
Dimethyl Naphthalene Isomer	UG/KG	57000	1	64000	J								
Naphthalene, Trimethyl- Isomer	UG/KG	78000	J					1					
Unknown	UG/KG												
Unknown Alkane	UG/KG	100000	J	440000	J	580000	J.	130000	1				
Unknown Aromatic	UG/KG												
Unknown Cycloalkane	UG/KG	200000	J	670000	J	580000	1	420000	J				
Unknown Pah	UG/KG	42000	J					100000	J				
Anthracene, Methyl- Isomer	UG/KG									11			
Decahydro-4,4,8,9,10- Pentamethylnap	UG/KG	41000	W										
Unknown Hydrocarbon	UG/KG	42000	1					89000	1				*
Methyl Methylethyl Benzene Isomer	UG/KG			670000	J	1		280000	J				
Naphthalene, Trimethyl Isomer	UG/KG												
Trimethyl Benzene Isomer	UG/KG			830000	J	260000	J	190000	J				
Tetramethyl Benzene Isomer	UG/KG												
9h-Fluorene, Methyl- Isomer	UG/KG	36000	J	N HELL				1					
Naphthalene, Ethyl- Isomer	UG/KG							1					

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation TABLE 3:

Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSEI 623720 06/06/ SLUD	96	PKCSED23E 62372009 06/06/96 SLUDGE	3	PKCSED23C 62372010 06/06/96 SLUDGE	623 06	SED23D 372011 /06/96 UDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS									Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
PESTICIDES/PCB's					+				0		-	
alpha BHC	UG/KG	92	U	92 L	1 1	8 U	92	U	0			
beta BHC	UG/KG	92	U	92 I	J 1	8 U	92	U	0			
delta BHC	UG/KG	380		92 1	1	8 U	92	U				
gamma BHC	UG/KG	92	U	92 1	1 2	IV	56	J	. 0			-380-
Heptachlor	UG/KG	92	U	92 I]]	8 U	58	J	650	50000		
Aldrin	UG/KG	92	U	43 J	2	6	92	U	170	50000	19-8	
Heptachlor epoxide	UG/KG	92	U	92 t	1 1	8 U	92	U				
Endosulfan I	UG/KG	92	U	92 1	1 1	8 U	92	U	0	50000		(
Dieldrin	UG/KG	180	U	220	1	00	180	U	180	50000		
4,4'-DDE	UG/KG	180	U	900	2	9 J	970		9000	50000		
Endrin	UG/KG	590		180 t	J 3	7 U	180	U	310000	50000		
Endosulfan II	UG/KG	180	U	180 t] 3	7 ·U	180	U	6200000			
4,4'-DDD	UG/KG	1200		3400	9	3	2000		12000	50000		
Endosulfan sulfate	UG/KG	190		A series and a ser	J 1		180	U				
4,4'-DDT	UG/KG	180	U	180 U	J 3	8	180	U	9000	50000		
Methoxychlor	UG/KG	920	U	920 I	_	80 U	920	U	5200000	50000		
Endrin ketone	UG/KG	180	U	180 t	J 3		180	U				
Endrin Aldehyde	UG/KG	180	U	180 U	J 3	17 U	180	U				
alpha-Chlordane	UG/KG	100		60	_	8 U	42	J				
gamma-Chlordane	UG/KG	370		92 1	J 2		39	J	Ch.			* 0
Toxaphene	UG/KG	3700	U	3700 1	_	740 U	3700	U	200	50000		
Aroclor-1016	UG/KG	1800	U	1800	_	70 U	1800	U				
Aroclor-1221	UG/KG	1800	U	1800	_	370 U	1800	U				
Aroclor-1232	UG/KG	1800	U	-140-5		370 U	1800	U				
Aroclor-1242	UG/KG	1800	U		_	370 U	1800	U				
Aroclor-1248	UG/KG	1800	U	1800	U 3	370 U	1800	U				

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		62372 06/00	PKCSED23A 62372008 06/06/96 SLUDGE		ED23B 72009 06/96 DGE	PKCSED23C 62372010 06/06/96 SLUDGE	PKCSED23D 62372011 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Aroclor-1254	UG/KG	1800	U	1800	U	370 U	1800 U				
Aroclor-1260	UG/KG	1800	U	1800		370 U	1800 U				
METALS	- 1000						The state of the s	0	1		
Aluminum	MG/KG	160	00	2	0700	28500	21200	0	-		
Antimony	MG/KG		3 B		3.4 B	5.1 B	2.7 B	* 340			
Arsenic	MG/KG	1	04		123	251	162	20		8.2	70
Barium	MG/KG	4	80		200	288	241	47000			
Beryllium	MG/KG		1 B		1,4	1.8	1.5	i i			
Cadmium	MG/KG	14	.6		7.9	4.9	8.5	100		1.2	9,6
Calcium	MG/KG	63	20		3560	3480	4580				
Chromium	MG/KG	4	72		341	251	382	0		81	370
Cobalt	MG/KG	15	.4		11.5 B	12.8 B	14.2	- 12			
Copper	MG/KG	7	40	1-	500	521	600	600		34	270
Iron	MG/KG	388	00	3	4900	33900	40200	0			
Lead	MG/KG	25	80		1320	2800	2200	600		46.7	218
Magnesium	MG/KG	78	50		6990	7170	8040				
Manganese	MG/KG	3	06		285	320	361	0		0.15	0.71
Mercury	MG/KG	12	2.6		8.3	7.2	8.4	270		20.9	51.6
Nickel	MG/KG	1	08		47.8	49.9	65	2400			
Potassium	MG/KG	40	10		3630	3790	4040				
Selenium	MG/KG		1.4		3.9	9.1	6.8	3100			
Silver	MG/KG	10).5		7.4	4.5	7.7	4100		1	3.7

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED23A 62372008 06/06/96 SLUDGE	PKCSED23B 62372009 06/06/96 SLUDGE	PKCSED23C 62372010 06/06/96 SLUDGE	PKCSED23D 62372011 06/06/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS						Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Sodium	MG/KG	11200	11300	9330	11200	0			
Thallium	MG/KG	3.6	3.3	4.8	4.2	2			
Vanadium	MG/KG	117	68.8	107	78	7100			
Zinc	MG/KG	1010	605	659	779	1500		150	410

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, FRASE 2 SERVICES 43.1. Platty Kill Canal Phase 2 Sediment Investigation

Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:	AB ID: AMPLING DATE:			PKCSED251 62404003 06/07/96 SLUDGE	В	The second secon	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS							Guidelines from Long et. al.	Guidelines from Long et. al.
VOLATILES									
Chloromethane	UG/KG	2700	U	5800	U	1000000	10000		
Bromomethane	UG/KG	2700	U	5800	U	1000000	1000		
Vinyl Chloride	UG/KG	2700	U	5800	U	7000	10000		
Chloroethane	UG/KG	2700	U	5800	U				
Methylene Chloride	UG/KG	1400	U	3000	U	210000	1000		
Acetone	UG/KG	2700	U	5800	U	1000000	100000		
Carbon Disulfide	UG/KG	1400	U	3000	U				
1,1-Dichloroethene	UG/KG	1400	U	3000	U	150000	10000		
1,1-Dichloroethane	UG/KG	1400	U	3000	U	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	1400	U	3000	U		50000		
Chloroform	UG/KG	1400	U	3000	U	28000	1000		7
1,2-Dichloroethane	UG/KG	1400	U	3000	U	24000	1000		
2-Butanone	UG/KG	2700	U	5800	U	1000000	50000		
1,1,1-Trichloroethane	UG/KG	1400	U	3000	U	1000000	50000		-
Carbon Tetrachloride	UG/KG	1400	U	3000	U	4000	1000		
Bromodichloromethane	UG/KG	1400	U	3000	U	46000	1000		
1,2-Dichloropropane	UG/KG	1400	U	3000	U	43000			
cis-1,3-Dichloropropene	UG/KG	1400	U	3000	U	5000	1000		
Trichloroethene	UG/KG	1400	U	3000	U	54000	1000		
Dibromochloromethane	UG/KG	1400	U	3000	U	1000000	1000		
1,1,2-Trichloroethane	UG/KG	1400	U	3000	U	420000	1000		
Benzene	UG/KG	1400	U	3000	U	13000	1000		
Trans-1,3-Dichloropropene	UG/KG	1400	U	3000	U	5000			
Bromoform	UG/KG	1400	U	3000	U	370000	1000		
4-Methyl-2-Pentanone	UG/KG	2700	U	5800	U	1000000	50000		

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:	PKCSED 6240400 06/07/9 SLUDG	6	62404003 06/07/96		Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)	
PARAMETERS	UNITS							Guidelines from Long et. al.	Guidelines from Long et. al.
2-Hexanone	UG/KG	2700	U	5800	U				
Tetrachloroethene	UG/KG	1400	U	3000	U	6000		-0-	
Toluene	UG/KG	1400	U	3000	U	1000000	500000		
1,1,2,2-Tetrachloroethane	UG/KG	1400	U	3000	U	70000	1000		
Chlorobenzene	UG/KG	4200	- 1	3000	U	680000	1000		
Ethylbenzene	UG/KG	1400	U	3000	U	1000000	100000		
Styrene	UG/KG	1400	U	3000	U	97000	100000		
Total Xylenes	UG/KG	1400	U	3000	U	1000000	10000		
VOLATILE TICS									
Methyl Propyl Benzene Isomer	UG/KG	31000	J						
Unknown Alkane	UG/KG	31000	J	120000	J				
Unknown Aromatic	UG/KG	31000	J						
Unknown Cycloalkane	UG/KG	31000	1	100000	J				
Unknown Hydrocarbon	UG/KG	31000	J						
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG	120000	JN	120000	JN			-	
Cyclohexane, Methyl-	UG/KG	140000	JN	140000	JN				
Ethylmethyl Benzene Isomer	UG/KG	31000	J						
Cyclohexane(Dot	UG/KG	370000	IN						-
Ethyl Dimethyl Benzene Isomer	UG/KG	31000	1						
Trimethyl Benzene Isomer	UG/KG	31000	J				1		
SEMI-VOLATILES						0			
Phenol	UG/KG	22000	U	24000	U	10000000	50000		1
Bis(2-Chloroethyl)Ether	UG/KG	22000	U	24000	U	3000	10000		
2-Chlorophenol	UG/KG	22000	U	24000	U	5200000	10000		
1,3-Dichlorobenzene	UG/KG	22000	U	24000	U	10000000	100000		
1,4-Dichlorobenzene	UG/KG	22000	U	24000	U	10000000	100000		
1,2-Dichlorobenzene	UG/KG	22000	U	24000	U	10000000	50000		
2-Methylphenol	UG/KG	22000	U	24000	U	10000000			*
2,2'-Oxybis(1-Chloropropane)	UG/KG	22000	U	24000	U	10000000			

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25A 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					Guidelines from Long et. al.	Guidelines from Long et. al.
4-Methylphenol	UG/KG	22000 U	24000 I	10000000	t a l		
N-Nitrosodi-n-Propylamine	UG/KG	22000 U	24000 t	660	100000		
Hexachloroethane	UG/KG	22000 U	24000 T	100000	100000		
Nitrobenzene	UG/KG	22000 U	24000 t	520000	10000		
Isophorone	UG/KG	22000 U	24000 t	10000000	50000		
2-Nitrophenol	UG/KG	22000 U	24000 U	D			
2,4-Dimethylphenol	UG/KG	22000 U	24000 t	10000000			
Bis(2-Chloroethoxy) Methane	UG/KG	22000 U	24000 T	7			
2,4-Dichlorophenol	UG/KG	22000 U	24000 t	3100000	10000		
1,2,4-Trichlorobenzene	UG/KG	22000 U	24000 t	1200000	100000		
4-Chloroaniline	UG/KG	22000 U	24000 t	4200000			
Hexachlorobutadiene	UG/KG	22000 U	24000 t	21000	100000		
4-Chloro-3-Methylphenol	UG/KG	22000 U	24000	J 10000000			1
Hexachlorocyclopentadiene	UG/KG	22000 U	24000 T	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	22000 U	24000 t	J 270000	10000		
2,4,5-Trichlorophenol	UG/KG	110000 U	120000	10000000	50000		
2-Chloronaphthalene	UG/KG	22000 U	24000	J.			
2-Nitroaniline	UG/KG	110000 U	120000 t	J L			
Dimethylphthalate	UG/KG	22000 U	24000 1	10000000			
2,6-Dinitrotoluene	UG/KG	22000 U	24000 t	J 0			
3-Nitroaniline	UG/KG	110000 U	120000	I			
2,4-Dinitrophenol	UG/KG	110000 U	120000 t	J 2100000	10000		
4-Nitrophenol	UG/KG	110000 U	120000	J			
Dibenzofuran	UG/KG	6300 J	24000	J			
2,4-Dinitrotoluene	UG/KG	22000 U	24000	j ,	10000		
Diethylphthalate	UG/KG	3100 J	24000 1	10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	22000 U	24000 1	J			
4-Nitroaniline	UG/KG	110000 U	120000 1	J			
4,6-Dinitro-2-Methylphenol	UG/KG	110000 U	120000	J 0			

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc.

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25A 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					Guidelines from Long et. al.	Guidelines from Long et. al.
N-Nitrosodiphenylamine (1)	UG/KG	22000 U	24000 U	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	22000 U	24000 U				-10
Hexachlorobenzene	UG/KG	22000 U	24000 U	2000	100000		
Pentachlorophenol	UG/KG	110000 U	120000 U	24000	100000		
Phenanthrene	UG/KG	47000	42000	0		240	1500
Carbazole	UG/KG	22000 U	24000 U				
Di-n-Butylphthalate	UG/KG	22000 U	24000 U	10000000	100000		
Butylbenzylphthalate	UG/KG	22000 U	24000 U	10000000	100000		
3,3'-Dichlorobenzidine	UG/KG	22000 U	24000 U	6000	100000		
Bis(2-Ethylhexyl)Phthalate	UG/KG	12000 J	9900 J	210000	100000		
Di-n-Octylphthalate	UG/KG	22000 U	24000 U	10000000	100000		
Dibenz(a,h)Anthracene	UG/KG	22000 U	24000 U	0.66	100000		
Benzo(b)Fluoranthene	UG/KG	5000 J	11000 J	4000	50000		
Benzo(k)Fluoranthene	UG/KG	2500 J	24000 U	4000	500000		
Indeno(1,2,3-cd)Pyrene	UG/KG	22000 U	24000 U	4000	500000		
Benzo(g,h,i)Perylene	UG/KG	2900 J	4100 J	0	11		
Acenaphthylene	UG/KG	22000 U	24000 U				
Naphthalene	UG/KG	22000 U	24000 U	4200000	100000	160	2100
2-Methylnaphthalene	UG/KG	22000 U	24000 U	71.0		70	670
Acenaphthene	UG/KG	28000	110000	10000000	100000	16	500
Fluorene	UG/KG	22000 U	24000 U	10000000	100000	19	540
Anthracene	UG/KG	25000	51000	10000000	100000	85.3	1100
Fluoranthene	UG/KG	29000	95000	10000000	100000	600	5100
Pyrene	UG/KG	48000	78000	10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	12000 J	22000 J	4000	500000	261	1600
Chrysene	UG/KG	21000 J	34000	40000	500000	384	2800
Benzo(a)Pyrene	UG/KG	7900 J	9600 J	660	100000	430	1600
SEMI-VOLATILE TICS			151		11		

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25A 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS		1			Guidelines from Long et. al.	Guidelines from Long et. al.
Dimethyl Naphthalene Isomer	UG/KG	4000 J			3.6		
Naphthalene, 2,3,6-Trimethyl- Isomer	UG/KG	4000 J					
Phenanthrene, 2,5-Dimethyl- Isomer	UG/KG	4000 J		- 1		14	-
Trimethyl Naphthalene Isomer	UG/KG	4000 J	98000 J	1		~	
Unknown Alkane	UG/KG	4000 J	120000 J				
Unknown Aromatic	UG/KG	4000 J	KIND OF		+		
Unknown Pah	UG/KG	4000 J	1				C-
Cyclohexane, 1,2,4-Trimethyl- Isomer	UG/KG	4000 J	140000 J				
Naphthalene, Decahydro-, Isomer	UG/KG	4000 J	310000 J				
Unknown	UG/KG	4000 J	240000 J				
Unknown Cycloalkane	UG/KG	4000 J	100000 J				
Anthracene, 9-Methyl- Isomer	UG/KG	4000 J				-	
Phenanthrene, 2,3-Dimethyl- Isomer	UG/KG	4000 J					
Phenanthrene, 3,6-Dimethyl- Isomer	UG/KG	4000 J					
Benzene, 1,2,3-Trimethyl- Isomer	UG/KG	4000 J					
Cyclohexane, 1,1,2-Trimethyl- Isomer	UG/KG	4000 J					
Cyclohexane, 1,3-Dimethyl-, Isomer	UG/KG	4000 J		. [2]11]			
Tetramethyl Benzene Isomer	UG/KG	4000 J					
PESTICIDES/PCB's			page and the second	0			
alpha BHC	UG/KG	37 U	86	0			
beta BHC	UG/KG	37 U	41 U	4			
delta BHC	UG/KG	250	41 U				
gamma BHC	UG/KG	37 U	41 U	-			
Heptachlor	UG/KG	37 U	41 U		50000		
Aldrin	UG/KG	37 U	41 U		50000		
Heptachlor epoxide	UG/KG	37 U	41 U	_			
Endosulfan I	UG/KG	37 U	41 U		7,7,7,7,7		
Dieldrin	UG/KG	860	310	180	50000		

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation

Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25A 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					Guidelines from Long et. al.	Guidelines from Long et. al.
4,4'-DDE	UG/KG	550	410	9000	50000		
Endrin	UG/KG	74 U	81 U	310000	50000		
Endosulfan II	UG/KG	74 Ü	81 U	6200000			
4,4'-DDD	UG/KG	1300	1100	12000	50000		
Endosulfan sulfate	UG/KG	190	23 J				
4,4'-DDT	UG/KG	150	81 U	9000	500000		Su
Methoxychlor	UG/KG	370 U	410 U	5200000	50000		
Endrin ketone	UG/KG	74 U	81 U				
Endrin Aldehyde	UG/KG	74 U	81 U				
alpha-Chlordane	UG/KG	400	120				
gamma-Chlordane	UG/KG	520	120				
Toxaphene	UG/KG	1500 U	1600 U	200	50000		
Aroclor-1016	UG/KG	740 U	810 U				
Aroclor-1221	UG/KG	740 U	810 U	11			

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25/ 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup Criteria	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					Guidelines from Long et, al.	Guidelines from Long et. al.
Aroclor-1232	UG/KG	740 U	810 U				
Aroclor-1242	UG/KG	740 U	810 U				
Aroclor-1248	UG/KG	740 U	810 U				
Aroclor-1254	UG/KG	740 U	810 U				
Aroclor-1260	UG/KG	740 U	810 U				
METALS			1 42	. 0			
Aluminum	MG/KG	19300	15900	0			
Antimony	MG/KG	18.5 B	2.6 B	340			
Arsenic	MG/KG	629	99.9	20		8.2	70
Barium	MG/KG	965	162	47000			
Beryllium	MG/KG	1.2 B	1.2	1			
Cadmium	MG/KG	5.6	12	100		1.2	9.6
Calcium	MG/KG	13500	5420	0			
Chromium	MG/KG	449	534	0		81	370
Cobalt	MG/KG	86.4	15	0			
Copper	MG/KG	1500	729	600		34	270
Magnesium	MG/KG	6620	6520	0			-
Manganese	MG/KG	2090	1290	.0			
Nickel	MG/KG	273	79.9	2400		20.9	51.6
Potassium	MG/KG	3250	3730	0			
Selenium	MG/KG	21.9	3.4	3100			
Silver	MG/KG	5.6	9.9	4100		1	3.7
Sodium	MG/KG	3580	2830	0			
Thallium	MG/KG	4.7	1.4 B	2			
Vanadium	MG/KG	259	132	7100			
Zinc	MG/KG	1530	837	1500		150	410
Mercury	MG/KG	13.2	7.7	270		0.15	0.71
Iron	MG/KG	189000	50500	0			

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED25A 62404002 06/07/96 SLUDGE	PKCSED25B 62404003 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)	
PARAMETERS	UNITS					Guidelines from Long et. al.	Guidelines from Long et. al.	
Lead	MG/KG	11600	4860	600		46.7	218	

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		6240 06/0	ED27A 04008 07/96 DGE	62404 06/07	PKCSED27B 62404009 06/07/96 SLUDGE		ED27C 94010 97/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	The second of th		EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
VOLATILES											4.4
Chloromethane	UG/KG	6500	U	34000	U	38000	U	1000000	10000		
Bromomethane	UG/KG	6500	U	34000	U	38000	U	1000000	1000		
Vinyl Chloride	UG/KG	6500	U	34000	U	38000	U	7000	10000		
Chloroethane	UG/KG	6500	U	34000	U	38000	U	V V			
Methylene Chloride	UG/KG	3400	U	18000	U	19000	U	210000	1000	The second	
Acetone	UG/KG	6500	U	34000	U	38000	U	1000000	100000		
Carbon Disulfide	UG/KG	3400	U	18000	U	19000	U			,	
1,1-Dichloroethene	UG/KG	3400	U	18000	U	19000	U	150000	10000		
1,1-Dichloroethane	UG/KG	3400	U	18000	U	19000	U	1000000	1000		
1,2-Dichloroethene(total)	UG/KG	3400	U	18000	U	19000	U		50000		
Chloroform	UG/KG	3400	U	18000	U	19000	U	28000	1000	1	
1,2-Dichloroethane	UG/KG	3400	U	18000	Ü	19000	U	24000	1000		
2-Butanone	UG/KG	6500	U	34000	Ü	38000	U	1000000	50000		
1,1,1-Trichloroethane	UG/KG	3400	U	18000	U	19000	U	1000000	50000		1
Carbon Tetrachloride	UG/KG	3400	U	18000	U	19000	U	4000	1000		
Bromodichloromethane	UG/KG	3400	U	18000	U	19000	U	46000	1000		
1,2-Dichloropropane	UG/KG	3400	U	18000	U	19000	U	43000			
cis-1,3-Dichloropropene	UG/KG	3400	U	18000	U	19000	U	5000	1000		
Trichloroethene	UG/KG	3400	U	18000	U	19000	U	54000	1000		
Dibromochloromethane	UG/KG	3400	U	18000	U	19000	U	1000000	1000	5 E - 1	
1,1,2-Trichloroethane	UG/KG	3400	U	18000	U	19000	U	420000	1000		
Benzene	UG/KG	3400	U	18000	U	19000	U	13000	1000	1	
Trans-1,3-Dichloropropene	UG/KG	3400	U	18000	U	19000	U	5000			
Bromoform	UG/KG	3400	U	18000	U	19000	U	370000	1000		
4-Methyl-2-Pentanone	UG/KG	6500	U	34000	U	38000	U	1000000	50000		
2-Hexanone	UG/KG	6500	U	34000	U	38000	U				

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSI 6240 06/0 SLUI	4008 7/96	9KCSEI 624040 06/07/ SLUD	009 /96	PKCSE 62404 06/03 SLUI	4010 7/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96		EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Tetrachloroethene	UG/KG	3400	Ü	18000	U	19000	U	6000			
Toluene	UG/KG	3400	U	18000	U	35000		1000000	500000		
1,1,2,2-Tetrachloroethane	UG/KG	3400	U	18000	U	19000	U	70000	1000		
Chlorobenzene	UG/KG	8300		18000	U	19000	U	680000	1000		
Ethylbenzene	UG/KG	24000		71000		48000		1000000	100000		
Styrene	UG/KG	3400	U	18000	U	19000	*U	97000	100000		
Total Xylenes	UG/KG	25000		490000		330000		1000000	10000		
VOLATILE TICS	4 15 65										
Methyl Propyl Benzene Isomer	UG/KG										
Unknown Alkane	UG/KG	86000	3	120000	1	840000	1				·
Unknown Aromatic	UG/KG	140000	J								
Unknown Cycloalkane	UG/KG	320000	J	370000	J	340000	I				
Unknown Hydrocarbon	UG/KG							1			
Cyclohexane, 1,2-Dimethyl-, Trans-	UG/KG										
Cyclohexane, Methyl-	UG/KG	380000	JN	1200000	JN	340000	JN				
Ethylmethyl Benzene Isomer	UG/KG	160000	J	600000	1	380000	J				
Cyclohexane(Dot	UG/KG			370000	JN						
Ethyl Dimethyl Benzene Isomer	UG/KG			630000	J	470000	J				
Trimethyl Benzene Isomer	UG/KG					500000	J				~
SEMI-VOLATILES								0			
Phenol	UG/KG	27000	U	28000	U	31000	U	10000000	50000		
Bis(2-Chloroethyl)Ether	UG/KG	27000	U	28000	U	31000	U	3000	10000		
2-Chlorophenol	UG/KG	27000	U	28000	U	31000	U	5200000	10000		
1,3-Dichlorobenzene	UG/KG	27000	U	28000	U	31000	U	10000000	100000		
1,4-Dichlorobenzene	UG/KG	27000	U	28000	U	31000	U	10000000	100000		
1,2-Dichlorobenzene	UG/KG	27000	U	28000	U	31000	U	10000000	50000		
2-Methylphenol	UG/KG	27000	U	28000	U	31000	U	10000000			
2,2'-Oxybis(1-Chloropropane)	UG/KG	27000	U	28000	U	31000	U	10000000			

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSE 62404 06/0" SLUI	4008 7/96	62404 06/07	PKCSED27B 62404009 06/07/96 SLUDGE		ED27C 4010 7/96 DGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					0.000			Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
4-Methylphenol	UG/KG	27000	U	28000	U	31000	U	10000000			
N-Nitrosodi-n-Propylamine	UG/KG	27000	U	28000	U	31000	TJ	660	100000		
Hexachloroethane	UG/KG	27000	U	28000	U	31000	U	100000	100000		
Nitrobenzene	UG/KG	27000	U	28000	U	31000	U	520000	10000		
Isophorone	UG/KG	27000	U	28000	U	31000	U	10000000	50000		
2-Nitrophenol	UG/KG	27000	U	28000	U	31000	"U				
2,4-Dimethylphenol	UG/KG	27000	U	28000 .	U	31000	U	10000000	100		
Bis(2-Chloroethoxy) Methane	UG/KG	27000	U	28000	U	31000	U			1	
2,4-Dichlorophenol	UG/KG	27000	U	28000	U	31000	U	3100000	10000		
1,2,4-Trichlorobenzene	UG/KG	27000	U	28000	U	31000	U	1200000	100000		
4-Chloroaniline	UG/KG	27000	U	28000	U	31000	U	4200000			
Hexachlorobutadiene	UG/KG	27000	U	28000	U	31000	U	21000	100000		
4-Chloro-3-Methylphenol	UG/KG	27000	U	28000	U	31000	U	10000000	7.55		
Hexachlorocyclopentadiene	UG/KG	27000	U	28000	U	31000	U	7300000	100000		
2,4,6-Trichlorophenol	UG/KG	27000	U	28000	U	31000	U	270000	10000		
2,4,5-Trichlorophenol	UG/KG	140000	U	140000	U	160000	U	10000000	50000		
2-Chloronaphthalene	UG/KG	27000	U	28000	U	31000	U				
2-Nitroaniline	UG/KG	140000	U	140000	U	160000	U				
Dimethylphthalate	UG/KG	27000	U	28000	U	31000	U	10000000			
2,6-Dinitrotoluene	UG/KG	27000	U	28000	U	31000	U	0			
3-Nitroaniline	UG/KG	140000	U	140000	U	160000	U		-		
2,4-Dinitrophenol	UG/KG	140000	U	140000	U	160000	U	2100000	10000		
4-Nitrophenol	UG/KG	140000	U	140000	U	160000	U				-
Dibenzofuran	UG/KG	11000	J	28000	U	66000	- 23				
2,4-Dinitrotoluene	UG/KG	27000	U	28000	U	31000	U		10000		
Diethylphthalate	UG/KG	7900	J	28000	U	31000	U	10000000	50000		
4-Chlorophenyl-Phenyl Ether	UG/KG	27000	U	28000	U	31000	U	7	23177		
4-Nitroaniline	UG/KG	140000	U	140000	U	160000	U				

TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSE 62404 06/07 SLUI	1008 7/96	PKCSE 62404 06/07 SLUD	009 /96	PKCSE 62404 06/07 SLUI	4010 7/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
4,6-Dinitro-2-Methylphenol	UG/KG	140000	U	140000	U	160000	U	0			
N-Nitrosodiphenylamine (1)	UG/KG	27000	U	28000	U	31000	U	600000	100000		
4-Bromophenyl-Phenylether	UG/KG	27000	U	28000	U	31000	U				
Hexachlorobenzene	UG/KG	27000	U	28000	U	31000	U	2000	100000		
Pentachlorophenol	UG/KG	140000	U	140000	U	160000	U	24000	100000		
Carbazole	UG/KG	27000	U	28000	U	31000	U				
Di-n-Butylphthalate	UG/KG	27000	U	28000	U	56000		10000000	N. T	1	
Butylbenzylphthalate	UG/KG	27000	U	28000	U	31000	U	10000000	100000	F == 5	
3,3'-Dichlorobenzidine	UG/KG	27000	U	28000	U	31000	U	6000	100000		
Bis(2-Ethylhexyl)Phthalate	UG/KG	22000	J	28000	U	31000	IJ	210000	100000		
Di-n-Octylphthalate	UG/KG	27000	U	28000	U	31000	U	10000000	100000		
Benzo(b)Fluoranthene	UG/KG	2800	J	12000	1	8000	J	4000	100000		
Benzo(k)Fluoranthene	UG/KG	27000	U	3100	J	31000	U	4000	100000	1	
Indeno(1,2,3-cd)Pyrene	UG/KG	27000	U	2900	1	31000	U	4000	50000		
Benzo(g,h,i)Perylene	UG/KG	27000	U	4200	1	31000	U	0	500000	~]	
Acenaphthylene	UG/KG	27000	U	28000	U	31000	U		500000		
Naphthalene	UG/KG	28000		220000		160000		4200000	4	160	2100
2-Methylnaphthalene	UG/KG	120000		720000	E	540000	E			70	670
Acenaphthene	UG/KG	14000	1	36000		31000	. U	10000000	100000	16	500
Fluorene	UG/KG	25000	J	110000		130000		10000000		19	540
Phenanthrene	UG/KG	64000		170000		99000		0	100000	240	1500
Anthracene	UG/KG	11000	J	53000		21000	J	10000000	100000	85.3	1100
Fluoranthene	UG/KG	9000	J	34000		17000	1	10000000	100000.	600	5100
Pyrene	UG/KG	17000	J	56000		36000		10000000	100000	665	2600
Benzo(a)Anthracene	UG/KG	5300	J	25000	J	15000	J	4000	100000	261	1600
Chrysene	UG/KG	9700	1	48000		24000	J	40000	500000	384	2800
Benzo(a)Pyrene	UG/KG	3400	1	14000	J	9900	1	660	500000	430	1600
Dibenz(a,h)Anthracene	UG/KG	27000	U	28000	U	31000	U	660	100000		

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Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX;		PKCSED27A 62404008 06/07/96 SLUDGE		PKCSE 62404 06/07 SLUD	009 /96	PKCSE 62404 06/07 SLUE	1010 7/96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup		EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS								Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
SEMI-VOLATILE TICS											
Dimethyl Naphthalene Isomer	UG/KG	79000	1								
Naphthalene, 2,3,6-Trimethyl- Isomer	UG/KG										
Phenanthrene, 2,5-Dimethyl- Isomer	UG/KG										
Trimethyl Naphthalene Isomer	UG/KG	59000	1								
Unknown Alkane	UG/KG	86000	J	120000	J	840000	7				
Unknown Aromatic	UG/KG	140000	J								
Unknown Pah	UG/KG	54000	I	230000	J						
Cyclohexane, 1,2,4-Trimethyl- Isomer	UG/KG										
Naphthalene, Decahydro-, Isomer	UG/KG										
Unknown	UG/KG		95.3	130000	J	4.00					
Unknown Cycloalkane	UG/KG	320000	J	370000	J	340000	J	31			
Anthracene, 9-Methyl- Isomer	UG/KG	46000	1			2		100			
Phenanthrene, 2,3-Dimethyl- Isomer	UG/KG	60000	J			-		100			+
Phenanthrene, 3,6-Dimethyl- Isomer	UG/KG	47000	1	*	10						
Benzene, 1,2,3-Trimethyl- Isomer	UG/KG			300000	1						
Cyclohexane, 1,1,2-Trimethyl- Isomer	UG/KG			130000	J						
Cyclohexane, 1,3-Dimethyl-, Isomer	UG/KG	H		130000	1	1				.00	
Tetramethyl Benzene Isomer	UG/KG			120000	J						
PESTICIDES/PCB's			-					0			
alpha BHC	UG/KG	180	U	190	U	52	U	0			
beta BHC	UG/KG	180	U	190	U	52	U	0			
delta BHC	UG/KG	180	U	170	J	52	U				
gamma BHC	UG/KG	180	U	190	U	36	1	0		de la companya della companya della companya de la companya della	
Heptachlor	UG/KG	180	U	120	1	52	U	650	50000		
Aldrin	UG/KG	180	Ú	190	U	28	1	170	50000		
Heptachlor epoxide	UG/KG	180	U	190	U	26	J				
Endosulfan I	UG/KG	180	U	190	U	52	U	0	50000		-

SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION Platty Kill Canal Phase 2 Sediment Investigation Bayonne Industries, Inc. Bayonne, New Jersey TABLE 3:

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED2 6240400 06/07/96 SLUDG	8	PKCSE 62404 06/07 SLUD	009 /96	PKCSEI 624040 06/07/ SLUD	010 /96	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup		EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS			ŭ .					Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Dieldrin	UG/KG	360	U	380	U	160		180	50000		
4,4'-DDE	UG/KG	360	U	2100		64	J	9000	50000		
Endrin	UG/KG	360	U	380	U	100	U	310000	50000		
Endosulfan II	UG/KG	360	U	380	U	100	U	6200000			
4,4'-DDD	UG/KG	1900		3200		150		12000	50000		
Endosulfan sulfate	UG/KG	410		380	U	15	T				
4,4'-DDT	UG/KG	360	U	140	J	41	J	9000	500000		
Methoxychlor	UG/KG	1800	U	1900	U	520	U	5200000	50000		
Endrin ketone	UG/KG	360	U	380	U	100	U)	
Endrin Aldehyde	UG/KG	93	J	380	U	100	U				
alpha-Chlordane	UG/KG	170	1	62	1	27	J			-	
gamma-Chlordane	UG/KG	310		190	U	52	U				
Toxaphene	UG/KG	7200	U	7600	U	2100	U	200	50000		
Aroclor-1016	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1221	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1232	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1242	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1248	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1254	UG/KG	3600	U	3800	U	1000	U				
Aroclor-1260	UG/KG	3600	U	3800	U	1000	U				
METALS						1		0		-	
Aluminum	MG/KG	13700		19100		28600		0			
Antimony	MG/KG	2.7	В	3.6	В	8.2	В	340			
Arsenic	MG/KG	170		131		282	-111	20		8.2	70
Barium	MG/KG	412		237		150		47000			
Beryllium	MG/KG	1	В	1.3	В	2		1			
Cadmium	MG/KG	10.8		8.2		3.7		100		1.2	9.6
Calcium	MG/KG	6220		5660		3560		0			

TABLE 3: SUMMARY OF ANALYTICAL RESULTS, PHASE 2 SEDIMENT INVESTIGATION

Platty Kill Canal Phase 2 Sediment Investigation

Bayonne Industries, Inc. Bayonne, New Jersey

CLIENT ID: LAB ID: SAMPLING DATE: MATRIX:		PKCSED27A 62404008 06/07/96 SLUDGE	PKCSED27B 62404009 06/07/96 SLUDGE	PKCSED27C 62404010 06/07/96 SLUDGE	Non-Residential Direct Contact Soil Cleanup Criteria 7/11/96	Impact to Ground Water Soil Cleanup	EFFECTS RANGE LOW (ERL)	EFFECTS RANGE MEDIAN (ERM)
PARAMETERS	UNITS					Criteria	Guidelines from Long et. al.	Guidelines from Long et. al.
Chromium	MG/KG	420	358	318	0		81	370
Cobalt	MG/KG	16.8	12 B	12,5 B	0			
Copper	MG/KG	1190	628	420	600		34	270
Magnesium	MG/KG	6730	8250	7660	0			
Manganese	MG/KG	274	324	288	0		*	
Nickel	MG/KG	110	52.1	46.7	2400		20.9	51.6
Potassium	MG/KG	3670	4900	4670	0			
Selenium	MG/KG	3.4	4.1	11.9	3100			
Silver	MG/KG	8	7.8	4.6	4100		1	3.7
Sodium	MG/KG	11000	11400	11100	0			
Thallium	MG/KG	1 B	1.4 B	2.6 B	2			
Vanadium	MG/KG	140	64.3	90.2	7100			
Zinc	MG/KG	926	681	601	1500		150	410
Mercury	MG/KG	7.4	9.8	7	270		0.15	0.71
Iron	MG/KG	45600	38500	41100	0			
Lead	MG/KG	3780	1670	3020	600		46.7	218

NOTES: U - Indicates that the compound was analyzed for but not detected.

- J- This qualifier indicates an estimated concentration. This qualifier is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL or PQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the Pesticide/Aroclor identification criteria, and the result is less than the CRQL or PQL but greater than zero.
- B This qualifier is used when the analyte is found in a method blank as well as the sample. It indicates possible sample contamination and warns the user to use caution when applying the results of this analyte.
- E Exceeds calibration range.
- N Indicates presumptive evidence of a compound. This qualifier is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all tentatively identified compound results. For generic classification of a tentatively identified compound, such as chlorinated hydrocarbon, the N code is not used.

BAYONNE INDUSTRIES, INC.

250 EAST 22ND ST.

P.O. BOX 67

BAYONNE, NEW JERSEY 07002



PHONE: (201) 437-2200 MAIN OFFICE FAX: (201) 339-4637 EXECUTIVE FAX: (201) 339-4704

September 26, 2001

Mr. Michael S. Kenney, Case Manager New Jersey Department of Environmental Protection Division of Responsible Party Site Remediation Bureau of State Case Management 401 East State Street, CN 028 Trenton, New Jersey 08625-0028

RECEIVED

Re:

Bayonne Industries, Inc., City of Bayonne, Hudson County, New Jersey Technical Modifications to the Platty Kill Canal, Hot Spot Delineation

Dear Mr. Kenney:

The March 2001 estimate of contaminated sediment in the Platty Kill Canal of 7350 cubic yards has been increased to 7488 cubic yards. The increase in volume is due primarily to incorporation of arsenic and lead concentrations in the sediment. A drawing presenting these findings is attached for your review.

Four copies of the revised map and summary table of the sludge analysis are enclosed for your use and distribution to the NJDEP case team and Mr. Walters, Case Manager for ExxonMobil. If this final draft version is acceptable, we will incorporate it into the Remedial Action Work Plan to be developed for the Platty Kill Canal.

Should you have any questions, please feel free to contact me.

Sincerely yours,

Mr. George M. Bress PE

Project Manager

Encl.

cc:

Mr. Rusty Walker, IMTT

Dr. Robert C. Weaver, IMTT

Mr. R. Fisette, IMTT (w/o attachments)

Mr. R. Scerbo, ExxonMobil

Mr. A. Cozzi, Bluestone

TABLE 1: FACTOR TOTAL FOR SLUDGE SAMPLES COLLECTED FROM THE PLATTY KILL CANAL BAYONNE INDUSTRIES, INC., BAYONNE, NEW JERSEY

Sample ID Depth (ft.) Sampling Date	PKCSED17A 0 - 5 06/06/96	PKCSED17B 5 - 10 06/06/96	PKCSED17C 10 - 15 06/06/96	PKCSED19A 0 - 5 06/06/96	PKCSED198 5 - 10 06/06/96	PKCSED19C 10 - 15 06/06/96	PKCSED21A 0 - 5 06/06/96	PKCSED21B 5 - 10 06/06/96	PKCSED21C 10 - 15 06/06/96	NJDEP
METALS (MG/KG) Arsenic Lead	Concent. Fact 30 1.5 554 0	7)28 6.4 2,020 3.7	194 9.7	Concent Fact. 5 45 2.2 798 1.3	Concent. Fact 54 2.7 844. 1.4	Concent. Fact. 	Concent. Fact 126 7 6.3 1,860 3.1	Concent. Fact. 82 4.1 1,860 1.8	Concent. Fact. 167 8,4 1,740 2.9	NRDCSC 20 600
VOLATILES (UG/KG) Chlorobenzene Total Xylenes	Concent. Fact 6,000 6 4,300	Concent. Fact. ND 190,800 2.8	Concent. Fact. ND 120,000 1.8	Concent Fact. ND ND	Concent. Fact ND 12,000	Concent. Fact. ND 220,000 3.3	Concent, Fact ND 4,600	Concent. Fact. ND 1150,000 2.2	Concent. Fact. ND (150,000 2.2	IGWSCC 1,000 67,000
SEMI-VOLATILES (UG/KG) Diethylphthalate Naphthalene	9,000 5,400	790,000 16 190,000 1.9	4,200 54,000	ND ND	ND 10,000	9,900 260,000 2.6	ND 69,000	ND 90,000	ND 61,000	50,000 100,000
FACTOR TOTAL	7.5	31	16	3.5	4.1	12	9.4	8.1	14	
Sample ID Depth (ft.) Sampling Date	PKCSED23A 0 - 5 06/06/96	PKCSED23B 5 - 10 06/06/96	PKCSED23C 10 - 15 06/06/96	PKCSED25A 0 - 5 06/06/96	PKCSED25B 5 - 10 06/06/96	PKCSED25C 10 - 15	PKCSED27A 0 - 5 06/07/96	PKCSED27B 5 - 10 06/07/96	PKCSED27C 10 - 15 06/07/96	
METALS (MG/KG) Arsenic Lead	Concent. Fact. 104 v 1.5 2,580 4.3	Concent. Fact. 123 6.2 1,320 2.2	260 12.5 2,800 4.7	629 31.5		Concent. Fact. NA NA	Concent. Fact. 170 8.5 3,780 6.3	Concent. Fact. 131 6.6 4,1670 2.8	287 14.1 3,020 5	NRDCSC0 20 600
VOLATILES (UG/KG) Chlorobenzene Total Xylenes	Concent. Fact. 7,708 7.7 20,000	Concent. Fact. ND 500,000 7.5	Concent. Fact. ND 230 000 3.4	Concent Fact. 4.200 4.2 ND	Concent. Fact. ND ND	Concent. Fact. NA NA	Concent. Fact. 8,300 8.3 25,000	Concent. Fact. ND 490,000 7.3	Concent. Fact. ND 330,800 4.9	IGWSCC 1,000 67,000
SEMI-VOLATILES (UG/KG) Naphthalene Acenaphthene Fluorene	11,000 6,800 9,900	70,000 13,000 38,000	70,000 10,000 46,000	ND 28,000 ND	ND 110,060 1.1 NO	NA NA NA	28,000 14,000 25,000	220,060 2.2 36,000 10,000 1.1	360,000 1.6 ND 3130,000 1.3	100,000 100,000 100,000
FACTOR TOTAL	14	16	21	38	14		23	20	27	

TABLE 1: FACTOR TOTAL FOR SLUDGE SAMPLES COLLECTED FROM THE PLATTY KILL CANAL BAYONNE INDUSTRIES, INC., BAYONNE, NEW JERSEY

Sample ID Depth (ft.) Sampling Date	PKCSED 0 - 3 10/21/9		PKCSED 3 - 6 10/21/9		PKCSED01C	PKCSED06A 0 - 4.5 10/20/94	PKCSED06E 4.5 - 9 10/20/94	PKCSE	D06C	9KCSED 0 - 3.2 10/20/9	5 .	3,25 - 0 10/20/9	6.5	PKCSED08C	NJDEP
METALS (MG/KG) Arsenic Lead	Concent. 324 4/700	7.8	145e 1,300	7.3 2.2	NA NA NA	The transport was a second of the second	Concent. Fac 37, 1.9 521	Application of the state of		Concent. 24 ≠ 351		Concent. 55 741	Fact. 2.7 1.2	Concent. Fact. NA NA	NRDCSC 20 600
VOLATILES (UG/KG) Chlorobenzene Benzene Total Xylenes	Concent. 13,000 3,300 6,600	13 3.3	Concent. 65,000 28,000 81,000	65 28 1.2	Concent. Fact NA NA NA NA	Concent Fact ND 14 17	Concent. Fac ND 2,700 2.7 98,000 1.5	NA NA	. Fact.	Concent. ND ND 33	Fact.	140 17 27	Fact	Concent. Fact. NA NA NA NA	IGWSCC 1,000 1,000 67,000
SEMI-VOLATILES (UG/KG) Naphthalene FACTOR TOTAL	230,000	2.1	2100,000	1	NA	770	66,000 6.1	NA		120	1.2	2,400	3.9	NA	16WSCC 100,000

NOTES

ND : Compound was not detected

NP : No Proposed Cleanup level available

NA : Not Analyzed

Parameters are above the NJDEP Soil Cleanup Criteria NRDCSC: Non Residential Direct Contact Soil Cleanup Criteria IGWSCC: Impact to Ground Water Soil Cleanup Criteria.

* Concentration factors were calculated by dividing the concentration of a specific compound exceeding the NJDEP Criteria by the corresponding criteria.

All factors exceeding the NJDEP IGWSCC or NRDSCC for As or Pb were added to obtain the FACTOR TOTAL.

M. Benny



State of New Jersey

James E. McGreevey Governor Department of Environmental Protection

Division of Water Quality P.O. Box 029 Trenton, NJ 08625-0029 Phone: (609) 292-4860 Fax: (609) 984-7938 Bradley M. Campbell Commissioner

DEC 3 U 2002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

George M. Bress, P.E. IMTT-Bayonne 250 E 22nd St Bayonne, NJ 07002

Re: Draft Surface Water Renewal Permit Action Category: B -Industrial Wastewater NJPDES Permit No. NJ0002089 IMTT-BAYONNE Bayonne City, Hudson County

Dear Permittee:

Enclosed is a draft New Jersey Pollutant Discharge Elimination System (NJPDES) permit action identified above which has been issued in accordance with N.J.A.C. 7:14A.

Notice of this draft permit action will appear in the Jersey Journal and in the December 24, 2002 DEP Bulletin. The DEP Bulletin is available on the internet at http://www.state.nj.us/dep/bulletin or by contacting the DEP Document Distribution Center at (609) 777-4398. In accordance with N.J.A.C. 7:14A-15.10(c)1i, the public comment period will close thirty days after its appearance in the newspaper.

As detailed in the *DEP Bulletin* and aforementioned newspaper written comments or a request that the Department hold a non-adversarial public hearing on the draft document must be submitted in writing to Pilar Patterseon, Chief, Bureau of Point Source Permitting Region 2, P.O. Box 029, Trenton, NJ 08625 by the close of the public comment period. All persons, including the applicant, who believe that any condition of this draft document is inappropriate or that the Department's tentative decision to issue this draft document is inappropriate, must raise all reasonable arguments and factual grounds supporting their position, including all supporting materials, during the public comment period.

The NJDEP will respond to all significant and timely comments upon issuance of the final document. The permittee and each person who has submitted written comments will receive notice of the NJDEP's final decision to issue, revoke, or redraft the document.

If you have questions or comments regarding the draft action, please contact Robert Hall at (609) 292-4860.

Enclosures

c: Permit Distribution List

Masterfile #: 14888; PI #: 46319

Sincerely,

Melisse Carasia Auriti, Supervisor

Bureau of Point Source Permitting - Region 2

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New Jersey Department of Environmental Protection Division of Water Quality Bureau of Point Source Permitting Region 2

PUBLIC NOTICE

Notice is hereby given that the New Jersey Department of Environmental Protection (NJDEP) proposes to renew the New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water (DSW) Permit NJ0002089 in accordance with N.J.A.C. 7:14A-1 et seq., and by authority of the Water Pollution Control Act at N.J.S.A. 58:10A-1 et seq., for the following discharge:

Applicant or Permittee

Facility

IMTT-BAYONNE 250 EAST 22ND ST Bayonne, NJ 07002 IMTT-BAYONNE 250 EAST 22ND ST Bayonne, Hudson County, NJ 07002-0000

The existing facility discharges treated stormwater, wastewater resulting from groundwater remediations, and industrial wastewater associated with the storage and distribution of chemicals and refined petroleum products into the Kill Van Kull, classified as SE-3 waters. The Kill Van Kull is located within the Newark Bay/Kill Van Kull/Upper NY Bay Basin and is a tributary to the New York Bay. The existing facility has a long-term average flow value of 0.593 million gallons per day (MGD) for DSN 001 and 0.21 MGD for DSN 002. This action proposes effluent limitations based on a flow of 2.18 MGD for DSN 001.

This draft renewal permit includes authorization to discharge additional treated groundwater from the Platty Kill Pond/Canal through DSN 002. Outfall DSN 002 is being relocated from the north end of the Platty Kill Canal to the Kill Van Kull.

Modification provisions as cited in the permit may be initiated in accordance with the provisions set forth in Part IV and upon written notification from the Department.

A draft NJPDES permit renewal has been prepared for this facility based on the administrative record filed at the NJDEP, 401 East State Street, Trenton, New Jersey 08625. Copies of the draft document are obtainable, for a nominal charge, and the administrative record is available for inspection by appointment only, Monday through Friday. If you are interested in scheduling an appointment or requesting specific information regarding the draft document, contact Robert Hall of the Bureau of Point Source Permitting Region 2 at (609) 292-4860.

Written comments or a request that the Department hold a non-adversarial public hearing on the draft document must be submitted in writing to Pilar Patterson, Chief, or Attention: Comments on Public Notice NJ0002089, Bureau of Point Source Permitting Region 2, P.O. Box 029, Trenton, NJ 08625 by the close of the public comment period, which closes thirty calendar days after publication of this notice in the newspaper. All persons, including the applicant, who believe that any condition of this draft document is inappropriate or that the Department's decision to issue this draft document is inappropriate, must raise all reasonable arguments and factual grounds supporting their position, including all supporting materials, during the public comment peod.

The NJDEP will respond to all significant and timely comments upon issuance of the final document. The permittee and each person who has submitted written comments will receive notice of the Department's permit decision.

Public Notice of Proposed Permit Actions (Division of Water Quality)

Permit Name No. = NJPDES No. = Type	Lactify Locations Address County	NJDER Case manager Bureau Phone No.	Receiving Discharge: Stream or Formation or POTW. Stream Classification. Watershed	Executive Summary
IMTT-BAYONNE NJ0002089 DSW Major	250 E 22ND ST Bayonne, NJ, 07002 Hudson	Robert Hall Bureau of Point Source Permitting Region 2 (609) 292-4860	DSN 001: Kill Van Kull/Upper NY Bay DSN 002: Kill Van Kull DSN 001: SE- 2 DSN 002: SE- 3 Newark Bay/Kill Van Kull/Upper NY Bay	This action is for the renewal of a NIPDES permit to discharge an average of 0.593 million gallons per day (MGD) for DSN 001 and 0.21 MGD for DSN 002 of treated industrial wastewater, stormwater, and remediated groundwater to the Kill Van Kull. The renewal permit will allow discharge of treated stormwater and groundwater from the Platty Kill Pond and Platty Kill Canal. Outfall DSN 002 is being relocated from the north end of the Platty Kill Canal to the Kill Van Kull.

Fact Sheet Page 1 of 17 NJPDES #: NJ0002089

New Jersey Department of Environmental Protection Division of Water Quality Bureau of Point Source Permitting Region 2

FACT SHEET

Masterfile #: 14888 PI #: 46319

This fact sheet sets forth the principle facts and the significant factual, legal, and policy considerations examined during preparation of the draft permit. This action has been prepared in accordance with the New Jersey Water Pollution Control Act and its implementing regulations at N.J.A.C. 7:14A-1 et seq. - The New Jersey Pollutant Discharge Elimination System.

PERMIT ACTION: Surface Water Renewal Permit Action

The permittee has applied for a New Jersey Pollutant Discharge Elimination System (NJPDES) Surface Water Renewal Permit Action through an application dated 08/06/2002.

The permittee has requested the following modifications to the permit:

- Authorization to discharge remediated stormwater and groundwater from the Platty Kill Pond and Platty Kill
 Canal at the Westside Wastewater Treatment Plant in order to remove the water for closure of the pond and
 canal.
- 2. Relocation of the discharge from DSN 002 from the north end of the Platty Kill Canal to the Kill Van Kull.

The Department has deemed the existing limitations as sufficient for the new receiving water. New monitoring is being imposed for metals to determine if any new limitations for those metals are needed.

1 Name and Address of the Applicant:

2 Name and Address of the Facility/Site:

IMTT-BAYONNE 250 E 22ND ST Bayonne, NJ, 07002 IMTT-BAYONNE 250 E 22ND ST Bayonne, Hudson County, NJ, 07002-0000

Discharge Location Information:

A copy of the appropriate section of a USGS quadrangle map indicating the location of the facility and discharge point(s) is included towards the end of this Fact Sheet.

Outfall Designator: DSN 001

Receiving Water:	Kill Van Kull/Upper New	Downstream Confluences:	New York Bay
	York Bay		
Via:	Outfall pipe	Receiving River Basin:	Newark Bay/Kill Van Kull/Upper
			NY Bay
Classification:	SE-2	WMA (a):	07
Latitude:	40° 39' 17.2"	Watershed:	Newark Bay/Kill Van Kull/Upper
			NY Bay
Longitude:	74° 05' 12.3"	Subwatershed:	Upper NY Bay / Kill Van Kull
County:	Hudson	HUC 14 (c):	02030104010030
Municipality:	Bayonne	77.00	
	01	itfall Description	21.
outfall Configuration:	Submerged pipe	Submerged Pipe	Not Applicable
		Characteristics:	

Outfall Designator: DSN 002 (Relocation)

	Receiving Water:	Kill Van Kull	Downstream Confluences:	New York Bay
	Via:	Outfall pipe (proposed	Receiving River Basin:	Newark Bay/Kill Van Kull/Uppe
		relocation)		NY Bay
	Classification:	SE-3	WMA (a):	07
	Latitude:	40° 39' 04"	Watershed:	Newark Bay/Kill Van Kull/Uppe
				NY Bay
	Longitude:	74° 06' 26"	Subwatershed:	Upper NY Bay / Kill Van Kull
	County:	Hudson	HUC 14 (c):	02030104010030
	Municipality:	Bayonne		
		$A_{ij} = \{i,j\}$, $A_{ij} \in \mathcal{A}$	outfall Description 🤲 👵	
ut	fall Configuration:	non-submerged pipe	Submerged Pipe	Not Applicable
			Characteristics:	** ** ** ** ** ** ** ** ** ** ** ** **

Footnotes:

- (a) WMA = Watershed Management Area
- (b) The 75 percentile flow is defined as the flow which is exceeded 75 percent of the time for the appropriate "period of record" as determined by the United States Geological Survey (USGS).
- (c) HUC 14 = 14 digit Hydrologic Unit Code
- (d) Please refer to Section 6 for the specific stream design low flow values utilized in parameter limitation calculations.

4 Facility Description:

The facility is classified as a major discharger by the Department of Environmental Protection (NJDEP) in accordance with the United States Environmental Protection Agency (EPA) rating criteria. Based on available data, the facility's estimated combined long-term average flow is 0.593 million gallons per day (MGD) for DSN 001 and 0.21 MGD for DSN 002. The permitted flows in the Northeast Water Quality Management Plan are 2.18 MGD for DSN 001 and 0.65 for DSN 002.

IMTT-Bayonne is a bulk liquid storage and distribution facility of chemicals and refined petroleum products. The facility maintains 642 aboveground storage tanks, ranging in capacity from 10,000 barrels to 248,00 barrels. IMTT-Bayonne's complex consists of four separate and distinct areas, known as Eastside, Westside, Chemical North, and Chemical South. The Eastside consist of the IMTT-Bayonne-BX facility (Area A) and the Exxon/Mobil Oil Facility (Area B). The Westside consists of the Bayonne Industries facility (Area C). Chemical North is currently a vacant area of the complex known as Area D with no industrial activity and no stormwater collection. The Chemical South part of the complex is known as Area E.

Wastewater from Areas A and B are treated in the Eastside Wastewater Treatment Plant (EWTP) and discharged to the Upper New York Harbor via Outfall DSN 001. Wastewater consists of equipment washwater, tank roof draw-off, decanted tank water, wastewater from tank bottoms, laboratory wastewater, stormwater runoff, remediated groundwater associated with sitewide cleanup measures, groundwater infiltration, and tank integrity test water. Exxon/Mobil is currently installing recovery wells and free oil recovery systems and remediating contaminated groundwater in Areas A and B. Wastewater from the Exxon/Mobil Lube Oil Facility (Area B) is pretreated in a separate treatment plant before being treated at the EWTP. Stormwater runoff from the IMTT-BC facility (Area E) is also treated at the EWTP in order to alleviate severe flooding at the IMTT-BC facility. During periods of low flow, treated effluent from the facility's Zimpro Wastewater Treatment Plant (ZWTP) is transferred on a batch process to the EWTP.

Currently, stormwater from the Bayonne Industries facility (Area C) and boiler blowdown is treated at the Westside Wastewater Treatment Plant (WWTP) and is discharged to the Kill Van Kull via the Platty Kill Canal. The outfall pipe, identified as DSN 002, is being moved directly to the Kill Van Kull as part of a remediation and closure project of the Platty Kill Pond and the Platty Kill Canal. Therefore, this permit will allow discharge of an additional flow of 0.014 MGD to 0.028 MGD as a maximum of treated groundwater and stormwater from the pond and canal. Once the pond is closed, it will be fitted with a cap; and stormwater runoff from this cap will be treated at the WWTP. High strength wastewater generated from operations in Area A and Area C is pre-treated in a Sequencing Batch Reactor (SBR) and then treated at the WWTP.

The EWTP consists of an oil-water separator, sand filters, and activated carbon units. The Exxon/Mobil Wastewater Treatment plant used to pre-treat wastewater from area B consists of an API separator, a dissolved air flotation unit, and storage tanks for excess stormwater. The WWTP consists of an oil-water separator, an equalization lagoon, and a granular activated carbon unit. The ZWTP consists of an oil-water separator, flow-equalization unit, pH adjustment unit, biological treatment unit augmented with powdered activated carbon, a clarifier, and a granular activated carbon unit.

Flow diagrams of the facility's wastewater treatment plants are included near the end of the fact sheet.

Type and Quantity of the Wastes or Pollutants:

The Permit Summary Table near the end of this fact sheet contains a summary of the quantity and quality of pollutants treated and discharged from the facility and the proposed effluent limitations. Effluent data was obtained from the facility's Monitoring Report Forms for the time period specified in the table and the application submitted by the applicant. Influent data was obtained from well data submitted by the applicant.

6 Summary of Permit Conditions:

The existing and proposed effluent limitations and other pertinent information regarding the draft permit are described below:

A. Basis for Effluent Limitations and Permit Conditions - General:

The effluent limitations and permit conditions in this permit have been developed to ensure compliance with the following:

- 1. NJPDES Regulations (N.J.A.C. 7:14A),
- 2. New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B),
- 3. 1998 "Identification and Setting of Priorities for Section 303(d) Water Quality Limited Waters in New Jersey" report,
- 4. Interstate Environmental Commission (N.J.A.C. 7:9B-1.5(b)2),
- Wastewater Discharge Requirements (N.J.A.C. 7:9-5.1 et seq.),
- 6. Secondary Treatment Standards (40 CFR Part 133, N.J.A.C. 7:14A-12.2 and -12.3),
- Existing permit limitations in accordance with N.J.A.C. 7:14A-13.19 and 40 CFR 122.44 (antibacksliding requirements),
- 8. Permit limitations in accordance with N.J.A.C. 7:9B-1.5(d) (antidegradation requirements),
- 9. Statewide Water Quality Management Planning Rules (N.J.A.C. 7:15),
- 10. Technology Based Treatment Requirements or Effluent Limitation Guidelines Requirements (N.J.A.C. 7:14A-13.2 to 13.4).
- USEPA Region II Memorandum, Permit Development Guidance: Cooling Water Surface Water Runoff, December 8, 1978 (John S. Frisco, Chief, Toxic and Inorganic Waste Section, USEPA, Region II)
- USEPA Region II Memorandum, EPA Region II Revised Guidance for Cooling Water and Storm Water Runoff, September 5, 1991 (John S. Kushwara, Acting Chief, Water Permits and Compliance Branch, USEPA, Region II)

Expression of all effluent limitations is in accordance with N.J.A.C. 7:14A-13.14 and 13.15.

Whole effluent toxicity limitations are expressed as a minimum as a percent.

Loading limitations (kg/day or g/day) for DSN 001 are calculated by multiplying the Northeast Water Quality Management Plan (NEWQMP) flow of 2.18 million gallons per day (MGD) by the conversion factor of 3.785 (L/gal) and the appropriate concentration limitation (mg/L or µg/L). The existing permit used a flow of 3.024 MGD, which is above the 2.18 MGD flow in the NEWQMP, and is therefore inconsistent with the Bureau of Watershed Management regulations. Therefore, the loading limitations have been recalculated with the correct flow of 2.18 MGD.

Limitations for DSN 002 are based on concentration only, as the discharge is only stormwater, which causes variable flows. Therefore, loading limitations are not appropriate for this discharge.

B. Basis and Derivation for Effluent Limitations and Monitoring Requirements-Specific:

DSN 001

- Flow: This permit does not include a numerical limitation for flow. Monitoring conditions are applied pursuant to N.J.A.C. 7:14A-13.13.
- 2. Total Organic Carbon (TOC): The concentration limitations are being carried forward from the existing permit in accordance with N.J.A.C. 7:14A-13.19. These concentration limits are a monthly average of 42 mg/L and a weekly average of 63 mg/L. The limitations for TOC were originally based on Best Professional Judgement (BPJ) using plant performance; and the ratio of 5-day Biological Oxygen Demand (BOD5) data and TOC data of 1:1.4, which allowed the imposition of the TOC limit versus a BOD5 limit.

The Department has been made aware that the loading limitations established in the existing permit were calculated with a flow of 3.024 MGD. This flow is above the allowable flow listed in the NEWQMP and is therefore inconsistent. Therefore, the loading limitations have been recalculated with the correct flow of 2.18 MGD listed in the NEWQMP. Also, the Department realized an incorrect conversion factor was used in the previous calculation, giving an incorrect limitation. Upon using the correct conversion factor of 3.785, multiplied by the NEWQMP flow of 2.18 MGD and the concentration values, the resulting loading limitations are a monthly average of 347 kg/d and a weekly average of 520 kg/d.

The monthly monitoring frequency is being retained from the existing permit.

- 3. Total Suspended Solids (TSS): The concentration limitations are based on the Interstate Environmental Commission (IEC) regulations. The monitor only requirement for monthly average and the daily maximum concentration limit of 50 mg/L are being carried forward in accordance with N.J.A.C. 7:14A-13.19. The monitor only requirement for loading is also being carried forward from the existing permit, as is the monthly monitoring frequency.
- 4. <u>pH</u>: The effluent limitations of 6.0 s.u. as a minimum and 9.0 s.u. as a maximum are being carried forward from the existing permit in accordance with N.J.A.C. 7:14A-13.19. The quarterly monitoring frequency is being changed to a monthly frequency in consideration of N.J.A.C. 7:14A-14.2(a) Table 14-2, which recommends a frequency of twice per month for major industrial facilities.
- 5. Petroleum Hydrocarbons: The effluent limitations are based on N.J.A.C. 7:14A-12.8(c) and are being carried forward from the existing permit in accordance with N.J.A.C 7:14A-13.19. The concentration limitations are 10 mg/L for a monthly average and 15 mg/L for a daily maximum. Monitoring only for monthly average and daily maximum for loading is also required. The weekly monitoring frequency is also being carried forward from the existing permit.
- 6. Arsenic, Total Recoverable: On November 10, 1998, the Department issued a modification to the existing permit to change the effluent limitations for Arsenic. This was a result of a Mixing Zone Analysis report, dated June 10, 1999, that was submitted to the Department. The concentration limitations from this modification are being carried forward in this permit renewal in accordance with N.J.A.C. 7:14A-13.19. The concentration limitations are 71 ug/L for a monthly average and 93 ug/L for a daily maximum.

The Department has been made aware that the loading limitations established in the existing permit were calculated with a flow of 3.024 MGD. This flow is above the allowable flow listed in the NEWQMP and is therefore inconsistent. Therefore, the loading limitations have been recalculated with the correct flow of 2.18

MGD listed in the NEWQMP. Also, the Department realized an incorrect conversion factor was used in the previous calculation, giving an incorrect limitation. The revised loading limitations are 0.59 kg/d for a monthly average and 0.88 kg/d for a daily maximum.

The weekly monitoring frequency is being reduced to monthly based on consistent compliance with the effluent limitations and N.J.A.C. 7:14A-14.2.

7. Wastewater Characterization Report (WCR) data: Data submitted on WCR's by the permittee dated from 8/00 to 5/02 were reviewed by the Department. All parameters were either at non-detectable levels or non-significant levels. The monitoring requirement for the Semi-Annual WCR is being carried forward in order to insure that all pollutants remain at consistently low levels.

8. Whole Effluent Toxicity (WET):

Section 101(a) of the Clean Water Act (CWA) establishes a national policy of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. In addition, section 101(a)(3) of the CWA and the State's Surface Water Quality Standards (SWQS) at N.J.A.C. 7:9B-1.5(a)3 state that the discharge of toxic pollutants in toxic amounts is prohibited. Further, 40 CFR 122.44(d) and N.J.A.C. 7:14A-13.6(a) require that where the Department determines using site-specific WET data that a discharge causes, shows a reasonable potential to cause, or contributes to an excursion above the SWQS, the permitting authority must establish effluent limits for WET. In order to satisfy the requirements of the CWA, the State's SWQS and the NJPDES Regulations, the need for a water quality based effluent limitation (WQBEL) for WET was evaluated for this discharge.

WQBELs for chronic WET were calculated in accordance with N.J.A.C. 7:14A-13.6 and USEPA's "Technical Support Document for Water Quality Based Toxics Control (EPA/505/2-90-001), March 1991" (TSD).

These limits are developed using an acute dilution factor (Df_a) of 300 and a chronic dilution factor (Df_c) of 300. These values are based on the report entitled "Critical Instream Waste Concentration Study for Exxon "Corporation, U.S.A., Bayonne, New Jersey", dated "July 1990", submitted on behalf of IMTT-Bayonne by IT Corporation; and on the correspondence dated 7/31/98 to Jim Grob of DEP from George M. Bress of IMTT-Bayonne regarding reevaluation of the 1991 critical instream waste concentration determination of new dilution factor.

The Df_a and Df_c were then used to determine acute and chronic Wasteload Allocations (WLAs) consistent with N.J.A.C. 7:14A-13.5, using a steady state model, as specified in section 5.4.1 of the TSD. Consistent with recommendations in the TSD, values of 0.3 acute toxic unit (TU_a) and 1.0 chronic toxic unit (TU_c) were used to interpret the narrative water quality criteria for WET contained at N.J.A.C. 7:9B-1.14(c) (see Response to Comments 13-74 through 13-89, 29 NJR 1861, (May 5, 1997)). The acute WLA (WLA_a) was translated to equivalent chronic toxic units (WLA_{ac}), to enable comparison-of acute and chronic WET limits, by multiplying the WLA_a by a default acute to chronic ratio (ACR) of 10.

The acute and chronic WLAs are then converted to an acute Long Term Average (LTA_{ac}) of 288.9749 and a chronic LTA (LTA_c) of 71.0228, using a default coefficient of variation (CV) of 0.6, and multipliers of 0.321 and 0.527 for the acute and chronic LTAs respectively. Those multipliers are based on the 99th percentile consistent with Response to Comments 13-74 through 13-89, 29 NJR 1861 and are found on Page 102 of the TSD. The resultant long term average values were evaluated and the more protective (e.g. lower) value selected for translation into a daily maximum WET limit using the applicable 99th percentile multiplier, as found on Page 103 of the TSD.

Fact Sheet Page 7 of 17 NJPDES #: NJ0002089

The daily maximum chronic WET limit of 71.0228 TU_{cs} was then converted to a permit limitation expressed as an IC25. The resultant limitation is an IC25 = 0.2% effluent. However, because the resultant chronic limitation is less than 10% and the equivalent LC50 is less than 50%, the minimum state standard acute limit of LC50 \geq 50% becomes the applicable limit, consistent with Response to Comments 13-74 through 13-89, 29 NJR 1861.

The monitoring frequency for acute WET of semi-annually is being carried forward in accordance with N.J.A.C. 7:14A-13.19

The test species method to be used for acute testing shall be the *Mysidopsis bahia* 96 hour definitive test. Such selection is based on the saline characteristics of the receiving stream, the existing permit, N.J.A.C. 7:9B-1.5 and N.J.A.C. 7:18, the Regulations Governing the Certification of Laboratories and Environmental Measurements (N.J.A.C. 7:18).

The monitor only requirement for chronic WET is being removed from the permit since a calculation by the Department has shown the acute WET test to be the more sensitive test method for the facility's discharge.

The Toxicity Reduction Implementation Requirements (TRIR) are included in accordance with N.J.A.C. 7:14A-13.17(a), 7:14A-6.2(a)5 and recommendations in Section 5.8 of the TSD. The requirements are necessary to ensure compliance with the applicable WET toxicity limitation and to expedite compliance with the WET toxicity limitation should exceedances of the WET limitation occur. As included in section B.1 of the TRIR requirements, the initial step of the TRIR is to identify the variability of the effluent toxicity and to verify that a consistent toxicity problem does in fact exist.

Effluent samples for conducting WET testing are to be collected after the last treatment step, consistent with the collection location for all other parameters.

DSN 002

- 1. Flow: This permit does not include a numerical limitation for flow. Monitoring conditions are applied pursuant to N.J.A.C. 7:14A-13.13.
- Total Organic Carbon: The concentration limitation of 100 ug/L as a daily maximum is being carried forward
 from the existing permit in accordance with N.J.A.C. 7:14A-13.19. The monitor only requirement for
 monthly average and the monthly monitoring are also being carried forward.
- Total Suspended Solids: The daily maximum concentration limit of 50 ug/L is being carried forward from the
 existing permit in accordance with N.J.A.C. 7:14A-13.19. The monitor only requirement for monthly average
 and the monthly monitoring frequency are also being carried forward.
- 4. <u>Petroleum Hydrocarbons</u>: The effluent limitations are based on N.J.A.C. 7:14A-12.8(c) and are being carried forward from the existing permit in accordance with N.J.A.C 7:14A-13.19. The concentration limitations are 10 mg/L for a monthly average and 15 mg/L for a daily maximum. The monthly monitoring frequency is also being carried forward from the existing permit.
- 5. <u>pH</u>: The effluent limitations of 6.0 s.u. as a minimum and 9.0 s.u. as a maximum are being carried forward from the existing permit in accordance with N.J.A.C. 7:14A-13.19. The quarterly monitoring frequency is being changed to a monthly frequency in consideration of N.J.A.C. 7:14A-14.2(a) Table 14-2, which recommends a frequency of twice per month for major industrial facilities and in consideration that a new source of wastewater will be added to this discharge.

6. Whole Effluent Toxicity (WET): The Department has no WET data available for DSN 002 and is therefore including a monitoring only requirement in this permit for acute WET so that the information to determine if a WQBEL is necessary can be obtained. A semi-annual monitoring frequency is being imposed for acute WET.

The test species method to be used for acute testing shall be the *Mysidopsis bahia* 96 hour definitive test. Such selection is based on the saline characteristics of the receiving stream, the existing permit, N.J.A.C. 7:9B-1.5 and N.J.A.C. 7:18, the Regulations Governing the Certification of Laboratories and Environmental Measurements (N.J.A.C. 7:18).

- 7. Benzene, Total Recoverable Copper, Total Recoverable Iron, Total Recoverable Lead, and Total Recoverable Mercury: The above listed parameters are shown at significant levels on the May 1995 Aqueous Sample Results Summary for the Platty Kill Pond water (Table 4-5 and 4-7 of Permit Application). They are also significantly above the SWQS at N.J.A.C. 7.9B-1.14, with the exception of iron for a SWQS does not currently exist. Therefore, the Department is imposing a monitor only requirement on a quarterly basis to determine if a limitation is needed. If deemed necessary, the permit may be reopened to include any needed limitations. Results shall be reported on the quarterly Wastewater Characterization Reports (WCRs).
- 8. Priority Pollutant Scan: In order to analyze the effluent after the additional flow from the Platty Kill Pond and Platty Kill Canal is added to the waste stream, the Department is imposing a priority pollutant scan for DSN 002. Sampling shall be performed on volatile organics, base/neutrals, metals, acids, and pesticides. This scan shall be done between EDP + 4 years and EDP + 4.5 years, with the results submitted to the Department on the semi-annual WCR on or before EDP + 4.5 years + 25 days.

D. Effluent Monitoring Frequencies and Sample Types:

Monitoring frequencies and sample types are in accordance with N.J.A.C. 7:14A-14, uMRess specified otherwise in the permit. In accordance with N.J.A.C. 7:14A-14.2, the permittee may submit a written request for a modification of the permit to decrease monitoring frequencies for non-limited parameters listed in Part III if site specific conditions indicate the applicability of such a modification.

E. Recommended Quantitation Levels Policy (RQLs):

The Department developed the RQLs to insure that useful data is provided to the Department in order to characterize the discharger's effluent. The Department recommends that the permittee achieve detection levels that are at least as sensitive as the RQLs found in Part III. The Department has determined that the quantitation levels listed therein can be reliably and consistently achieved by most state certified laboratories for most of the listed pollutants using the appropriate procedures specified in 40 CFR Part 136. FAILURE TO ATTAIN A QUANTITATION LEVEL AS SENSITIVE AS A LISTED RQL IS NOT A VIOLATION OF THE PERMIT, BUT DOES TRIGGER SOME ADDITIONAL REPORTING REQUIREMENTS FOR THE PERMITTEE AS SPECIFIED IN PART IV OF THE PERMIT.

F. Reporting Requirements:

All data requested to be submitted by this permit shall be reported on the Discharge Monitoring Reports (DMRs) and Waste Characterization Reports (WCR) as appropriate and submitted to the Department as required by N.J.A.C. 7:14A-6.8(a).

G. General conditions:

In accordance with N.J.A.C. 7:14A-2.3 and 6.1(b), specific rules from the New Jersey Administrative Code have been incorporated either expressly or by reference in Part I and Part II.

H. Outfall Tag:

Pursuant to N.J.A.C. 7:14A-6.2(a)9, the permittee shall notify the Department that a tag to mark the location of the relocated outfall pipe (DSN 002) has been installed on or before the start of discharge.

I. Operator Classification Number:

The operator classification requirement is no longer included in the permit. To obtain or determine the appropriate licensed operator classification for the treatment works specified, the permittee shall contact the Bureau of Engineering North at (609) 292-6894 to determine the appropriate licensed operator classification for the treatment works specified.

J. Flow Related Conditions:

The numerical value of 2.18 MGD for DSN 001 and 0.65 MGD for DSN 002 used for flow as permit conditions are consistent with the flows listed in the Northeast Water Quality Management Plan (NEWQMP). The additional flow of between 0.014 and 0.028 MGD for the remediation of the Platty Kill Pond is not addressed in the NEWQMP, but is considered consistent on the basis that remedial actions are beneficial to the environment and that the remediation will not cause the permittee to exceed the flow value of 0.65 MGD for DSN 002 allowed by the NEWQMP.

K. Residuals/Sludge Conditions:

Analysis of the industrial sludge generated from the oil/water separators for the parameters found on Table III-C-1 and Table III-D-I of Part III is required pursuant to N.J.A.C. 7:14C-1.9(b) of the Sludge Quality Assurance Regulations. The frequency of monitoring is dependent on the amount of sludge produced. Since the amount of sludge generated from each oil/water separator is less than 290 dry metric tons per year the frequency of monitoring is annually. Analysis of these sludge sources is not required during those calendar years where sludge is not removed for ultimate management or when the sludge(s) are managed as a hazardous waste.

All treatment works with a discharge regulated under N.J.A.C. 7:14A must have permits that implement applicable technical standards for residuals management. Generally, the permit issued to the treatment works generating the residual will include applicable residual quality monitoring as well as other general conditions required by N.J.A.C. 7:14A-6. In addition, the permit may include conditions related to any aspect of residual management developed on a case-by-case basis where the Department determines that such conditions are necessary to protect public health and the environment.

The permit may also include conditions establishing requirements for treatment works that send residual to other facilities for final use or disposal. Thus, ALL residual preparers (that is, generators as well as persons who manage the residual) are required to submit basic information concerning their residual use and disposal practices. This basic information is submitted by compliance with the Sludge Quality Assurance Regulations (N.J.A.C. 7:14C).

The documents listed below have been used to establish the residual conditions of the Draft Permit:

- United States Environmental Protection Agency "Standards for the use or disposal of sewage sludge" (40 CFR Part 503),
- b. "New Jersey Pollutant Discharge Elimination System" (N.J.A.C. 7:14A),
- c. Technical Manual for Residuals Management, May 1998,
- d. USEPA <u>Part 503 Implementation Guidance</u>, EPA 833-R-95-001, October 1995. This document is a compilation of federal requirements, management practices and EPA recommended permit conditions for sewage sludge use and management practices,
- e. USEPA A Plain English Guide to the EPA Part 503 Biosolids Rule, EPA/832/R-93/003, September 1994,
- f. New Jersey "Statewide Sludge Management Plan", November 1987 and
- g. New Jersey "Sludge Quality Assurance Regulations" (SQAR), N.J.A.C. 7:14C.

7 Variances to Permit Conditions:

Procedures for modifying a water quality based effluent limitation are found in the New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B-1.8 and 1.9. If a water quality based effluent limitation has been proposed in this permit action, the permittee may request a modification of that limitation in accordance with N.J.A.C. 7:14A-11.7(a). This request must be made prior to the close of the public comment period. The information that must be submitted to support the request may be obtained from the Division of Watershed Management at (609) 633-7020.

8 Description of Procedures for Reaching a Final Decision on the Draft Action:

Please refer to the procedures described in the public notice that is part of the draft permit. The public notice for these actions are published in the Jersey Journal and in the DEP Bulletin.

Contact Information

If you have any questions regarding this permit action, please contact Robert Hall, Bureau of Point Source Permitting – Region 2 at (609) 292-4860.

Permit Summary Table DSN 001

Unless otherwise noted all effluent limitations are expressed as maximums.

PARAMETER	UNITS	AVERAGING	WASTEWATER	APPLICATION	EXISTING	FINAL	MONIT	ORING
		PERIOD	DATA (1)	DATA (2)	LIMITS	LIMITS	Freq.	Sample Type
Flow	MGD	Monthly Avg. Daily Max.	0.593 2.344	0.6	MR MR	MR MR	Continuous	Meter
Total Organic Carbon (TOC)	kg/d	Monthly Avg. Weekly Avg.	11.6 11.6	15.71 - 15.71	481 721	347 520	Monthly	24 Hr Composite
Total Organic Carbon (TOC)	mg/L	Monthly Avg. Weekly Avg.	5.9 5.9	7.88 7.88	42 63	42 63	Monthly	24 Hr Composite
Total Suspended Solids (TSS)	kg/d	Monthly Avg. Daily Max	9.62 23.55	10.57 10.57	MR MR	MR MR	Monthly	24 Hr Composite
Total Suspended Solids (TSS)	mg/L	Monthly Avg. Daily Max.	6 8	5.33 5.33	MR 50	MR 50	Monthly	24 Hr Composite
Petroleum Hydrocarbons	kg/d .	Monthly Avg. Instant Max	1.3 11.5	1.55 3.63	MR MR	MR MR	Weekly	24 Hr Composite
Petroleum Hydrocarbons	mg/L	Monthly Avg. Instant Max.	0.66 0.66	0.59	10 15	10 15	Weekly	24 Hr Composite
Effluent pH	su	Instant Min. Instant Max.	6.9 7.5	6.9 7.4	6.0 9.0	- 9.0	Monthly	Grab
Arsenic, Total Recoverable	kg/d	Monthly Avg. Daily Max.	0.03 0.33	0.0265 0.0449	0.82 1.07	0.59 0.88	Monthly	24 Hr Composite
Arsenic, Total Recoverable	ug/L	Monthly Avg. Daily Max.	13.3 84.2	13.52 19.40	71 93	71 93	Monthly	24 Hr Composite
Acute Toxicity, LC50	%	Minimum	>100	>100	50	50	Semi- Annually	Composite
Chronic Toxicity, IC25	%	Minimum	>100	>100	MR	-	Semi- Annually	Composite

Footnotes and Abbreviations:

MR Monitor and report only

(1) Wastewater data originates from the information submitted on the monitoring report forms from 8/00 to 7/02.

(2) Data in this column is from the NJPDES application dated 9/6/02.

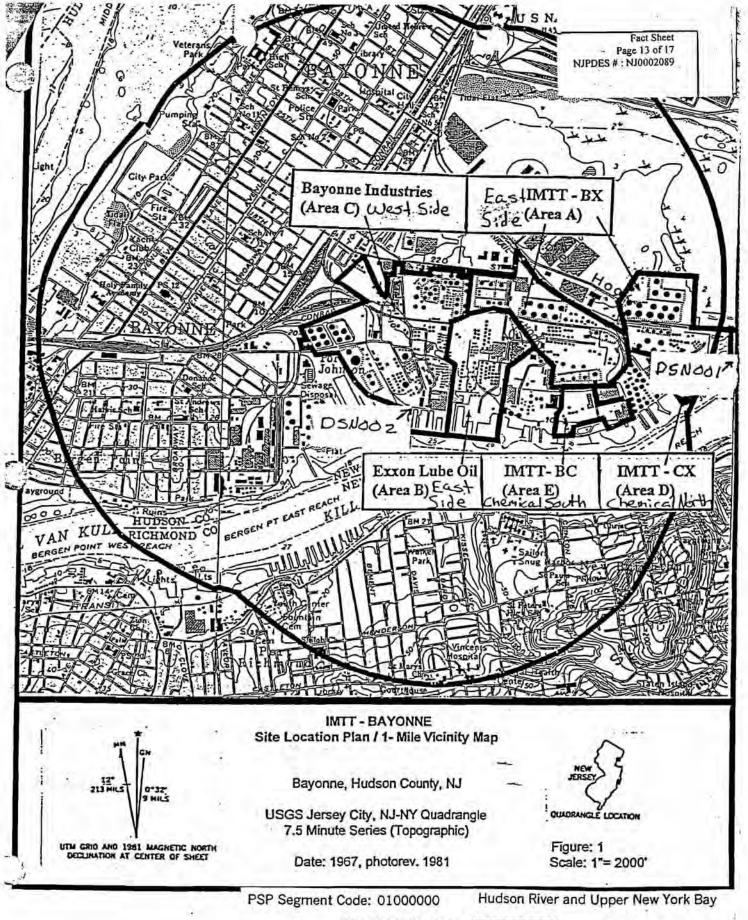
Permit Summary Table DSN 002

Unless otherwise noted all effluent limitations are expressed as maximums. Dashes (--) indicate there is no effluent data, no limitations, or no monitoring for this parameter depending on the column in which it appears.

PARAMETER	UNITS	AVERAGING	WASTEWATER	APPLICATION	EXISTING	FINAL	MONITO	RING
		PERIOD	DATA (I)	DATA (2)	LIMITS	LIMITS	Freq.	Sample Type
Flow	MGD	Monthly Avg. Daily Max.	0.21 0.94	0.23 0.47	MR MR	MR MR	Continuous	Meter
Total Organic Carbon (TOC)	mg/l.	Monthly Avg. Daily Max.	7.86 7.86	11.36 11.36	MR 100	MR 100	Monthly	Grab
Total Suspended Solids (TSS)	mg/L	Monthly Avg. Daily Max.	12.4 25	12.0 12.24	MR 50	MR 50	Monthly	Grab
Petroleum Hydrocarbons	mg/L	Monthly Avg. Instant Max.	0.82 1.8	0.62 0.66	10 15	10 15	Monthly	Grab
Effluent pH	su	Instant Min. Instant Max.	7.6 8.6	7.2 8.64	6.0 9.0	6.0 9.0	Monthly	Grab
Benzene	ug/L	Monthly Avg. Daily Max.	-	120 (3)	2	MR MR	Quarterly	Grab
Copper, Total Recoverable	ug/L	Monthly Avg. Daily Max.	7	1130 (3)	2	MR MR	Quarterly	Grab
Iron, Total Recoverable	ug/L	Monthly Avg. Daily Max.	ŭ.,	6960 (3)	# 1	MR MR	Quarterly	Grab
Lead, Total Recoverable	· ug/l_	Monthly Avg. Daily Max.	7	682 (3)	-	MR MR	Quarterly	Grab
Mercury, Total Recoverable	ug/l	Monthly Avg. Daily Max.	1 H	4 (3)	-	MR MR	Quarterly	Grab
Acute Toxicity, LC50	%	Minimum				MR	Semi-Annual	Composit

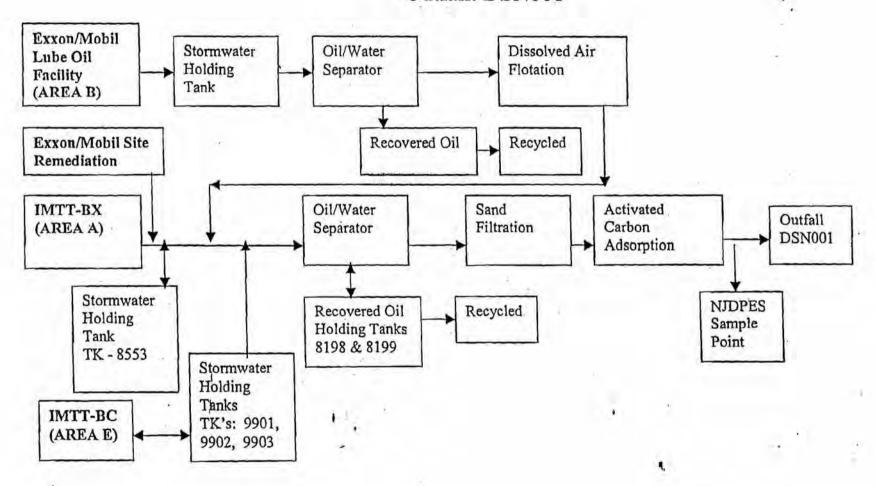
Footnotes and Abbreviations:

- MR Monitor and report only
- (1) Wastewater data originates from the information submitted on the monitoring report forms from 8/00 to 7/02.
- (2) Data in this column is from Form C of the NJPDES application dated 9/6/02.
- (3) This data originates from the May 1995 Aqueous Sample Results Summary for the Platty Kill Pond water (Table 4-5 and 4-7 of Permit Application).



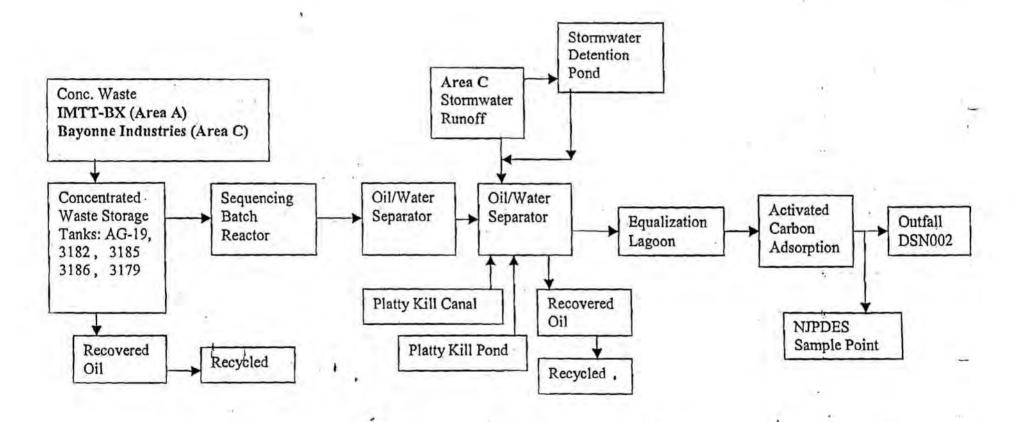
EPA Reach Number: 02030104-001

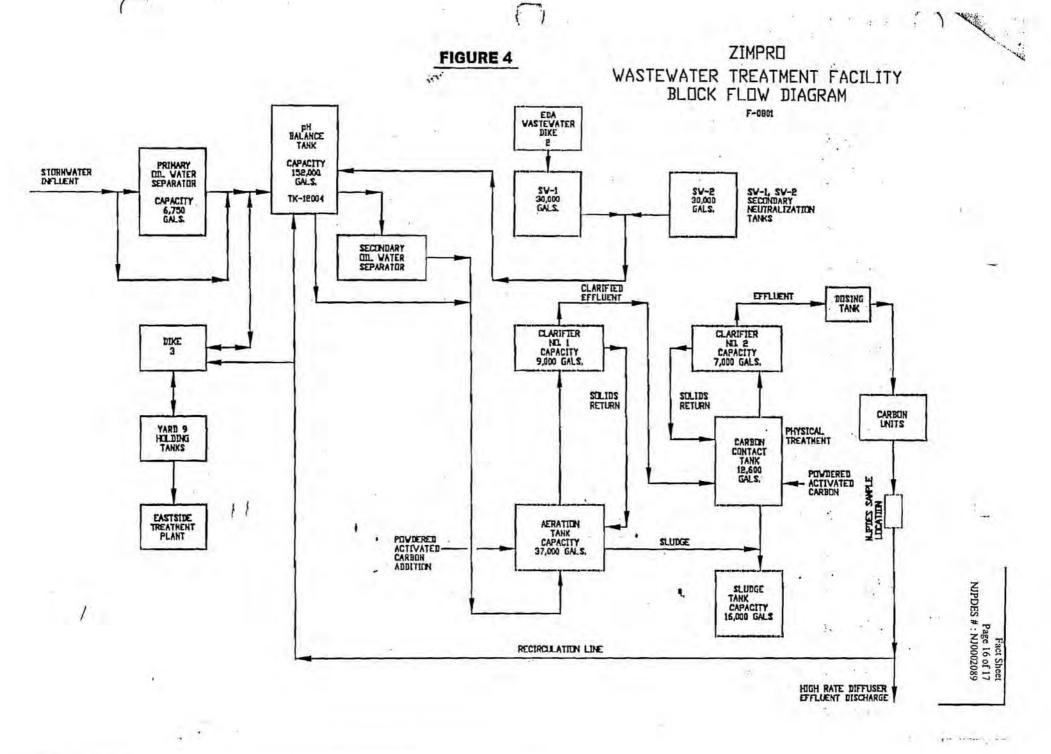
Figure 2
Eastside Wastewater Treatment Plant
Block Flow Diagram
Outfall: DSN001



Page 14 of 17
NJPDES #: NJ0002089

Figure 3
Westside Wastewater Treatment Plant
Block Flow Diagram
Outfall: DSN002





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Contents of the Administrative Record

The following items are used to establish the basis of the Draft Permit:

- 1. 33 U.S.C. 1251 et seq., Federal Water Pollution Control Act. [C]
- 2. 40 CFR Part 131, Federal Water Quality Standards. [A] [C]
- 40 CFR Part 122, National Pollutant Discharge Elimination System. [C]
- N.J.S.A. 58:10A-1 et seq., New Jersey Water Pollution Control Act. [A] [B]
- 5. N.J.A.C. 7:14A-1 et seq., New Jersey Pollutant Discharge Elimination System Regulations. [A] [B]
- 6. N.J.A.C. 7:9B-1 et seq., New Jersey Surface Water Quality Standards. [A] [B]
- N.J.A.C. 7:9-5.1 et seq., Wastewater Discharge Requirements. [A] [B]
- 8. N.J.A.C. 7:15, Statewide Water Quality Management Planning Rules. [A] [B]
- N.J.A.C. 7:14C, Sludge Quality Assurance Regulations. [B]
- 10. "Field Sampling Procedures Manual", published by the NJDEP. [A]
- 11. "Discharge Monitoring Report (DMR) Instructional Manual", published by the NJDEP, [A]
- "EPA Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991. [A]
- 13. 1998 "Identification and Setting of Priorities for Section 303(d) Water Quality Limited Waters in New Jersey" report. [A] [B]
- 14. Interstate Environmental Commission Regulations, N.J.S.A. 32:18-1 et seq.
- 16. NJPDES/DSW Permit Application dated 8/6/02. [A]
- 17. NJPDES/DSW Permit NJ0002089 issued 12/29/97. [A]
- NJPDES/DSW Minor Permit Modification NJ0002089 issued 12/6/01.
 Site Visit on [date of site visit].
- 20. Discharge Monitoring Reports (DMRs) from 8/00 to 7/02.
- 21. Compliance Inspection Reports dated 12/31/97 and 7/3/02.
- Correspondence dated 7/31/98 to Jim Grob of DEP from George M. Bress of IMTT-Bayonne regarding Reevaluation of the 1991 Critical Instream Waste Concentration Determination of new Dilution Factor.

Footnotes:

- [A] Denotes items that may be found in the NJPDES/DSW Administrative Record Library located in the NJDEP Central File Room, 401 East State Street, Trenton, New Jersey.
- [B] Denotes items that may be found on the New Jersey Department of Environmental Protection (NJDEP) website located at "http://www.state.nj.us/dep/".
- [C] Denotes items that may be found on the United States Environmental Protection Agency (USEPA) website at "http://www.epa.gov/".



DISCHAR : FLIMINATION SYSTEM

The New Jersey Department of Environmental Protection hereby grants you a NJPDES permit for the facility/activity named in this document. This permit is the regulatory mechanism used by the Department to help ensure your discharge will not harm the environment. By complying with the terms and conditions specified, you are assuming an important role in protecting New Jersey's valuable water resources. Your acceptance of this permit is an agreement to conform with all of its provisions when constructing, installing, modifying, or operating any facility for the collection, treatment, or discharge of pollutants to waters of the state. If you have any questions about this document, please feel free to contact the Department representative listed in the permit cover letter. Your cooperation in helping us protect and safeguard our state's environment is appreciated.

Permit Number: NJ0002089

Draft: Surface Water Renewal Permit Action

Permittee: IMTT-BAYONNE 250 EAST 22ND STREET BAYONNE, NJ 07002 Co-Permittee:

Property Owner: IMTT-BX 321 ST CHARLES AVE NEW ORLEANS, LA 70130-0000 Location Of Activity: IMTT-BAYONNE 250 EAST 22ND STREET BAYONNE, NJ 07002-0000

Authorization(s) Covered Under This Approval	Issuance Date	Effective Date	Expiration Date
B -Industrial Wastewater	次等變對國際能		

By Authority of: Commissioner's Office

DEP AUTHORIZATION
Pilar Patterson, Chief-Bureau of Point Source Permitting - Region 2
Division of Water Quality

(Terms, conditions and provisions attached hereto)

Division of Water Quality



State of New Jerseu DEPARTMENT OF ENVIRONMENTAL PROTECTION

LISA P. JACKSON Commissioner

April 20, 2006

ION S. CORZINE Governor

> Mr. Dennis M. Toft Wolf & Samson One Boland Drive West Orange, NJ 07052

Re:

TYPE OF APPLICATION:

LNA Application

TRANSACTION:

Sale of Stock in Corporation

NAME:

IMTT Bayonne

ADDRESS: MUNICIPALITY: 250 East 22nd Street Bayonne City

COUNTY:

Hudson

BLOCK & LOT

See Attachment for Lots & Blocks

APPLICATION NO:

N20062093

Dear Mr. Toft:

This is in response to your application received April 19, 2006 concerning the applicability of the Industrial Site Recovery Act (ISRA) to the above referenced establishment. On the basis of the sworn statements set forth in the affidavit signed by James O. Coleman, the Department finds that this transaction is not subject to the provisions of ISRA.

This decision is made in light of the absence of an industrial establishment as defined within the North American Industry Classification System numbers covered by the Act. Any inaccuracies in the affidavit or subsequent changes in the facts as stated therein could alter the Department's determination.

The inapplicability of the Industrial Site Recovery Act to this transaction does not relieve the above referenced establishment of any responsibilities under any other environmental statutes, regulations or permits. In addition, this determination of ISRA inapplicability does not constitute any finding by the New Jersey Department of Environmental Protection as to the current site condition or existence or nonexistence of any hazards to the environment at this location. In addition, obtaining an ISRA Applicability Determination is not a substitute for the appropriate inquiry into a site prior to acquisition for the purposes of an innocent purchaser defense (pursuant to the NJ Spill Compensation and Control Act).

Should you have any further questions regarding this matter, please contact Jim Bono at (609) 633-1434.

Sincerely,

James J. Bono, Supervisor Applicability Unit

CCG000041

Attachment A

Tax Block and Lot Numbers and Current Property Owners

Owner	Block	Lot(s)
Bayonne Industries,	452	6, 7, 9
Inc.	452.02	6, 7, 8, 11
77	463	1, 2, 3
	464.01	1, 3, 4, 5, 5.01, 5.02, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25
	464.02	1,2
	465	5, 6, 6.7, 7
	470.01	I
	476.01	1, 2, 4, 5, 6, 7, 8, A1
0	476.02	1,2
	477.01	1, B3
	477.01	1, 1.01, RG42RG43RG44
	477.01	1,2
	477.02	1,3
	477.02	2
	478	1A, 1B, 2, 8A, 8B, 10A
	479	1
	1513	1, 2, 3, 4, 5
IMTT-BX	418	3, 4
A Market Comment	419	1
	427	3
	465	1, 2, 3, 4
	466	1, 2, 3, 4
	480	1
IMTT-BC	481	3, 3.01, 6
	482	3, 4, 4.01, 5, 6
IMTT-CX	482	10, 11
Hook Terminaling Company	481	5
IMTT-Pipeline	(easements only)	(easements only)
IMTT-Interterminal	332	6,7
Pipeline	333.01	7
	475	4, 11, 12, 13, 14, 15

A		
8. 1		
		2087
		CASE #N2006 2093
Transaction Type		11: 10-01
S-9		DATE REC'D: 4 / 1.2701
1 - Sale of Property		re-
2 - Sale of Business		TRANSACTION TYPE:
3 - Business Ceasing Operations		and the second
4 - Refinancing		SIC #: NAICS #:
5 - Sale of Stock in Corp.		FT F D D D T D D D T D D D D D D D D D
6 - Condemnation	140	HAZARDOUS SUBSTANCE:
7 - Bankruptcy	1.5	OF TO THOSE OF THE ALLOS
8 - Corporate Merger		SUBJECT (YES/NO)
9 - Printshp Situation Change		CONTACT: TTW
10 - Intra Family	-	CONTACT:
12 - Sale of Assets		LETTER #:
13 - Other	11	LEITER#
14 - Sale of Property & Business	0.00	INSPECT: YES/NO # OF SITES
15 - Sale of Property & Cessation		HABI BCI. I BB/140 # OF BILBS
15 Care of Froperty & Cossilion	0.000	DATE OF INSPECTION: / /
	0.0	SUPPLEMENTAL INFO DATE: //
		DEFICIENT: YES/NO
	. 1 (44)-	LETTER:
	CIT OF FIRM	DO DOD INIA DINEGRALINANI
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CHRONOLOG	GY OF EVEN	IS FOR LNA INVESTIGATION
CHRONOLOG	SUMA	
DATE		

WOLFF & SAMSON PC

COUNSELLORS AT LAW

THE OFFICES AT CRYSTAL LAKE ONE BOLAND DRIVE

West Orange, New Jersey 07052 973-325-1500 TELECOPIER: 973-325-1501

> NEW YORK OFFICE: 140 BROADWAY FORTY-SIXTH FLOOR NEW YORK 10005 212-973-0572

PHILADELPHIA OFFICE: TWO PENN CENTER, SUITE 1310 1500 JOHN F. KENNEDY BOULEVARD PHILADELPHIA, PENNSYLVANIA 19102 215-567-2878

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THOMAS W. SABINO
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STEVEN S. KATZ'
JUNE S. MELLER'
BARBARA B. MANAHAN
JILL D. ROSENBERG'
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TO WEST ORANGE

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"MEMBER PA AND NY BARS
"MEMBER NJ, NY AND PA BARS
"MEMBER NJ BAR ONLY
"MEMBER PA BAR ONLY
"REGISTERED PATENT ATTORNEY

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JEFFREY M. GUSSOFF

JOHN F. CASEY JAMES D. FERRUCCI

STEPHEN L FERSZT

LAURENCE M. SMITH

WILLIAM E. GOYDAN

MARTIN L. WIENER (1942 - 2002)

April 7, 2006

Via Fax and Federal Express

DARRYL WEISSMAN

LORI GRIFA

PETER E. NUSSBAUM

MICHELLE A SCHAAP

ADAM K. DERMAN

ANDREW SAMSON

ADAM P. FRIEDMAN

SCOTT D. BARON

MITCHELL S. BERKEY

CATHERINE P. WELLS

MICHAEL A. JANKOWSKI"

JONATHAN BONDY

DANIEL M. MURPHY-

JOSEPH TRIPODI

RHONDA CARNIOL

ANDREW D. ELLIS

BARBARA S. HUTCHEON

STEPHEN M. ASPERO

ROBERT T. CARLTON, JR.* KLAUS P. STOFFEL*

OF COUNSEL

JUNIE HAHN

CARL B. LEVY

New Jersey Department of Environmental Protection Bureau of Risk Management, Initial Notice & Case Assignment ISRA Applicability Section 401 East State Street, 5th Floor P.O. Box 432 Trenton, New Jersey 08625-0432

Re:

IMTT-Bayonne 250 East 22nd Street

Bayonne, Hudson County, New Jersey

Dear Sir or Madam:

Enclosed is an Applicability/Nonapplicability Affidavit for the above-referenced site pursuant to the Industrial Site Recovery Act, N.J.S.A. 13:1K-6 et seq. Also enclosed is a check for the applicable fee of \$200.00 made payable to Treasurer, State of New Jersey.

Thank you for your attention to this matter. Please call me if you have any questions or require additional information.

Very truly yours,

LINDA D SULLIVAN

Enclosures

<u>NOTE:</u> Please read the entire introduction before completing this application. It contains important information about this form and the ISRA process. All sections of this application shall be completed or it will be returned unprocessed.

AVIIII MANTONE		
	/Ms.) Dennis M. Toft,	
Company	Wolff & Samsor	n PC
	One Boland Driv	
City or Town	West Orange	
State New	/ Jersey Zip Code	e <u>07052</u> Tele. No. <u>973-530-2014</u>
Property Location	on for which request is being	g submitted:
Street Address	250 East 22 nd S	Street
Municipality	See Attachment A	Tax Lot(s) See Attachment A
wunicipality	Bayonne	County Hudson
1 Sale of I 2 Sale of I 3 Busines	Property Business s Ceasing Operations Stock in a Corporation*	detailed description of these transactions. 7 Corporate Merger* 8 Partnership Situation Change * 9 Intra Family 10 Corporate Reorganization 11. Sale of Assets
6 Bankrup	otcy	
Other: ((Explain) See Attachme	nt B
sale is pending, prov	vide the date of the Planned	Transaction: Upon receipt of LNA
		Applicability/Nonapplicability Determination is reque
	Charles Adversarial Entre Len	T pprocedure, to reque
Name	See Attachment A	
Street Address	250 East 22 nd Street	
Municipality	Bayonne	State New Jersey
Zip Code	07002 Tele N	10. 201-437-2200
	and the same of the same of	s only a cessation of operations)
Purchaser: (not	required if the transaction is	s only a dessation of operations)
Name	Macquarie Terminal Holdin 125 West 55 th Street	ngs LLC

Please provide the name of each Business/Industrial Establishment that operated at the address listed in Question B on or after December 31, 1983. Include the dates of operations and the applicable NAICS number. Note, if the applicant is a tenant and the transaction affects only its operation (i.e., a cessation of operations or sale of business), it is acceptable to only list the tenant's business and seek a determination regarding the applicability of ISRA to the operation of the current business. Please read the summarized definition of Industrial Establishment on the first page of this application before going any further. (Attach additional sheets if necessary.)

Name of Business/Industrial Establishment	Dates of C	peration	NAICS # 6 Digits
7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -	From MM/YY		100
See Attachment C	Pre-1983	Present	493190
		-	

#NJD045435807

G.	Operations:				
Dece	esses conducted at the imber 31, 1983. The de the site is used in co action, simply describe	site for each b escription shou onnection with the tenant's op	usiness listed in F above on Id include the nature of each		erty since ecifically,
contig				e owner described in D abov perations at the contiguous p	
	Not Applicable	4 63.44			4
H.	History:				
Dece	Provide the mber 31, 1983. (Attack			ners and dates of owners	hip since
	<u>Name</u>		Address	Date	
=	See Attachment C	2			
=					
revie	w? X Yes No. If y	es, please pro	vide the case or application	e subject of any other ECR/ number NJD064288855;	

I. Hazardous Substances or Wastes: Answer this question only if the facility or business has a subject NAICS number as listed in Appendix C of the ISRA rule and the applicant is seeking a determination of ISRA non applicability based on the absence of any hazardous substances or wastes being generated, manufactured, used or stored at the listed site. Be advised that heating oil is a hazardous substance. *. Check here X if this question does not apply and go to section J.

- n X

*Note: Heating oil, formerly contained in historic above or below ground tanks, is not a hazardous substance for the purpose of this section, if the tanks were removed with the Department's no further action approval. Applicants who closed tanks without Departmental oversight are subject to ISRA and should file a General Information Notice within 5 days of a triggering event. Was the building(s) ever heated by oil? Yes No__. If yes, please provide a copy of the no further action determination to support your request.

By signing the certification at section **N** of this application, I certify that no hazardous substances or wastes, as defined at N.J.A.C. 7:1E, were <u>ever</u> used during the ownership or operations of the business(s) listed in Question F above. The Signatory on the certification shall initial here

Sections J-L below are for the use of applicants who seek a determination as to whether a specific transaction is a "Change of ownership," "Closing operations" or "Transferring ownership or operations." Should the applicants' NAICS number not be among those listed at N.J.A.C. 7:26B, Appendix C, as subject to ISRA, then these sections should be disregarded. Please proceed to section

- J. If the applicant is seeking a determination for a transfer of ownership or operations involving an evaluation of whether the indirect owner's assets would have been available for remediation please provide the following information as an attachment to this application:
 - 1. Identify each direct owner and each indirect owner of the industrial establishment;
 - Identify whether the indirect owner has exerted fiscal control over the direct owner or industrial establishment including, but not limited to, imposing any restriction upon the financing, borrowing, budgeting, dividends and cash management of the direct owner or industrial establishment;
 - 3. List all persons that are officers and directors for both the direct owner and the indirect owner of the industrial establishment to establish whether the officers, directors and employees of the indirect owner constitute a majority of the directors of the direct owner or the industrial establishment or such smaller number of directors as is sufficient to effectively direct the management and policies of the direct owner or the industrial establishment;
 - 4. Identify whether the officers, directors and employees of the indirect owner are involved in the day-to-day operations of the direct owner or the industrial establishment and whether the day-to-day operations of the direct owner or the industrial establishment are relevant to the generation, manufacture, handling, storage or disposal of hazardous substances or hazardous wastes;
 - 5. Identify whether the indirect owner has the ability to control the activities, policies or decisions of the direct owner or the industrial establishment and whether these activities, policies or decisions are relevant to the generation, handling, storage or disposal of hazardous substances or hazardous wastes; and
 - The applicant shall provide any additional information which may be relevant to this determination.

- K. If the applicant is seeking a determination for a transfer of ownership or operations involving an evaluation of whether the subject transaction is a corporate reorganization not substantially affecting the ownership of the industrial establishment, please provide the following information as an attachment to this application:
 - Identify each direct owner of the industrial establishment, indirect owner of the industrial establishment and the organizational structure of the person, prior to, and after the proposed transaction;
 - Identify whether the transaction involves the transfer of stock and/or assets, solely among persons under common ownership or control and/or shareholders or owners of such persons. A transaction between related corporations that prepare financial statements or tax returns on a consolidated basis will be presumed to be among corporations under common ownership or control;
 - 3. Identify: (i.) Whether the transaction will result in an aggregate diminution of more than 10 percent in the net worth of the industrial establishment or of the person directly owning or operating the industrial establishment. The applicant must include all transactions occurring within the five-year period preceding the date of the proposed transaction in the calculation of "aggregate diminution"; or (ii.) Whether there is an equal or greater amount in assets that is available for the remediation of the industrial establishment before and after the transaction(s);
 - Identify whether the transferee has a registered agent in New Jersey who is authorized to accept service on behalf of the transferee. If so, the applicant shall provide the name and address of the registered agent;
 - 5. Identify whether the assets of an indirect owner transferring any direct or indirect interest in the stock or assets of the industrial establishment would have been available for the remediation of the industrial establishment based upon the criteria set forth in (b) above; and
 - 6. Provide any additional information which may be relevant to this determination.

L. See Attachment B.

If the applicant is seeking a determination for a transfer of ownership or operations involving an evaluation of whether the subject transaction is a transfer of a controlling interest in the industrial establishment, please provide the following information as an attachment to this application.

- 1. Identify whether the transferor is transferring more than 50 percent of the voting or ownership interest in the direct owner or operator or indirect owner of an industrial establishment. There is a rebuttable presumption that any person who has more than 50 percent of the voting or ownership interest holds a controlling interest in that direct owner or operator or indirect owner; or
- Identify whether the transferor is transferring 50 percent or less of a voting or ownership interest in the direct owner or operator or indirect owner of an industrial establishment and: i. Identify whether the transferor possess(es), directly or indirectly, the power to direct or cause the direction of the management and policies of the entity; and
 - ii. Identify whether a voting trust, shareholder's agreement, proxy or similar agreement exists which would enable the transferor to elect a majority of the board of directors or a smaller number of directors sufficient to effectively direct or cause the direction of the management and policies of the entity; and
 - 3. Provide any additional information which may be relevant to this determination.

M.	Right of Entry: Pursuant to the Industrial Site Recovery Act rules (N.J.A.C. 7:26B-1.9), by the
subm	ission and certification of this document, I give my consent to the Department and or its authorized
repre:	sentatives to enter the Industrial Establishment, upon the presentation of credentials, to inspect the
site to	verify the accuracy of this application. JC (The signatory on the certification shall initial
here)	

CERTIFICATION:

The following certification shall be signed by a duly authorized person pursuant to the requirements of N.J.A.C. 7:26B-1.6(e) as follows.

 For a corporation, by a principal executive officer of at least the level of vice president.

 For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

 For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official.

N. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of N.J.S.A. 13:1K-6, et seq., I am personally liable for the penalties set forth at N.J.S.A. 13:1K-13.

Typed/F	Printed Name	1	mes O. C		W	Preside	+
Signatu	re games	O Cole	man		ate 4	17/06	
Sworn t	o and Subscribed	Before Me					
on this_	7 44	day					
Date of	ayania	CHAPMAN 20	06_				
M	Notary Pu	hic of N.J.	COOCU				
Notary	21 July						
	Have you enclo	sed a check	c or money o	order for \$2	00? <u>X</u>	Yes _ N	lo
	Check Number	87155					
	Have you inclu	ded the <u>orig</u>	inal signatu	re of the ov	vner or op	erator?	X Yes _ No
	Has the certific	ation been u	properly not:	arized?	Y Yes	No	

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IMTT-Bayonne, a Delaware partnership

Typed/Printed Name By: James O. Coleman Title President

Signature James O Coleman Date 4/7/00

Sworn to and Subscribed Before Me
on this 7-10

Date of Office 20 06

Notary

M. Right of Entry: Pursuant to the Industrial Site Recovery Act rules (N.J.A.C. 7:26B-1.9), by the submission and certification of this document, I give my consent to the Department and or its authorized representatives to enter the Industrial Establishment, upon the presentation of credentials, to inspect the site to verify the accuracy of this application. (The signatory on the certification shall initial here)

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IMTT-Interterminal Pipeline, a Delaware partnership

Typed/Printed Name By: James O. Coleman Title President

Signature James O Coleman Date 4/7/06

Sworn to and Subscribed Before Me

on this 7 th day

Date of April 2006

Notary

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Hook Terminaling Company, a Delaware partnership

Typed/Printed Name By: James O. Coleman Title President

Signature Games O Coleman Date 4/7/06

Sworn to and Subscribed Before Me
on this 7 M day

Date of Oppil 2006

Notary

Notary

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Typed/Printed N		T-BC, a Delaware p		Title Presiden
Signature	gore	2 O Coleman	Date	11/2/00
Sworn to and St	bscribed Be	fore Me		
on this	to a	prit day		
Date ofQ	pril'	20.06		
	V00 m	. Chapmon	b	

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IMTT-BX, a Delaware partnership

Typed/Printed Name By: James O. Coleman Title Preside

Signature Jame O Coleman Date 4/7/06

Sworn to and Subscribed Before Me

on this 7th day

Date of April 2006

Notary

Attachment A

 $m \sqrt{g^{-1}} = \sqrt{m}$

Tax Block and Lot Numbers and Current Property Owners

Owner	Block	Lot(s)		
Bayonne Industries,	452	6, 7, 9		
Inc.	452.02	6, 7, 8, 11		
2.7	463	1, 2, 3		
1	464.01	1, 3, 4, 5, 5.01, 5.02, 7, 8, 9, 10, 11, 12, 13,		
		14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25		
1	464.02	1, 2		
	465	5, 6, 6.7, 7		
)	470.01	1		
	476.01	1, 2, 4, 5, 6, 7, 8, A1		
	476.02	1, 2		
	477.01	1, B3		
	477.01	1, 1.01, RG42RG43RG44		
	477.01	1, 2		
	477.02	1, 3		
	477.02	2		
1	478	1A, 1B, 2, 8A, 8B, 10A		
	479	1		
	1513	1, 2, 3, 4, 5		
IMTT-BX	418	3, 4		
	419	1		
	427	3		
	465	1, 2, 3, 4		
	466	1, 2, 3, 4		
	480	1		
IMTT-BC	481	3, 3.01, 6		
	482	3, 4, 4.01, 5, 6		
IMTT-CX	482	10, 11		
Hook Terminaling Company	481	5		
IMTT-Pipeline	(easements only)	(easements only)		
IMTT-Interterminal	332	6,7		
Pipeline	333.01	7		
	475	4, 11, 12, 13, 14, 15		

Attachment B

Even though the operations at the facility are not ISRA-subject based on the NAICS code, the applicant is also seeking a determination for a transfer of ownership interest involving an evaluation of whether the subject transaction is a transfer of a controlling interest in the industrial establishment, pursuant to section "L" of the application. The following information describes the transaction:

Bayonne Industries, Inc., IMTT-BX, IMTT-BC, IMTT-CX, Hook Terminaling Company, IMTT-Pipeline, and IMTT-Interterminal Pipeline (the current owners of the industrial establishment) are ultimately owned by Loving Enterprises, Inc. ("Loving"), a Louisiana corporation. Therefore, Loving is the indirect owner of the industrial establishment. This transaction involves the sale of a 50% ownership interest in Loving to Macquarie Terminal Holdings LLC, a Delaware limited liability company. The daily operational control of the industrial establishment will remain the same. The current operations are not ISRA-subject, and there will be no change in operations at the facility as a result of this transaction.

Pursuant to Section L of the application, Loving is issuing and selling 50% of the ownership interest in the indirect owner of the industrial establishment. The transferor and Macquarie will share equally the power to direct or cause the direction of the management and policies of Loving, and a shareholder's agreement enables each of them to elect half of the members of the board of directors. However, the operational control of the industrial establishment in Bayonne will remain the same following the transaction.

Attachment C

Prior Owners and Operators

IMTT-Interterminal Pipeline purchased its portion of the facility from Coastal Oil New York, Inc., 1001 Louisiana Street, Houston, Texas 77002 on February 26, 2004. At the same time, **IMTT-Pipeline** received an assignment of Coastal's rights under several existing pipeline easements. IMTT-Pipeline does not own any real property.

Bayonne Industries, Inc. has owned its portion of the facility from prior to 1983. Other operators of this property (in addition to IMTT-Bayonne) include the following: Oil Mop - East Coast, L.L.C., environmental consulting company from August 1997; Bennet Testing Services, Inc., independent chemical testing facility from November 1995; Enron Capital & Trade Resources Corp., a cogeneration facility (currently undertaking a remediation pursuant to ISRA Case No. 98513); Mid-States Packaging & Distribution, Inc., warehouse for storage of plastic resins from March 1994; Bookazine, book warehouse from November 1997 to March 1998; Coviello Transportation Company, general warehousing and storage from June 1989 to April 1994; H&M Warehousing & Transportation, general warehousing and storage from June 1988 to December 1988; Nicaretta Construction Company, storage of construction equipment from December 1973 to September 1995; Railhead Transfer, trucking and warehousing of general cargo in October 1984; Rona Pearl, manufacturing/warehousing/sales of cosmetic products from August 1971 to April 1995 (Rona Pearl submitted an ISRA filing for its termination of operations and received an NFA letter in June 1995 - E94100); Saybolt Inc., petroleum testing laboratory from December 1985 to July 1998; Universal Air Cargo, general warehouse/storage from October 1987 to December 1998; and Votainer, general warehousing and storage of shipping containers from October 1984 to January 1988.

IMTT-BC purchased its portion of the facility from Powell-Duffryn, Ltd. in February 1997. Powell-Duffryn (formerly known as El Dorado Terminals) operated at the facility from March 1979 through February 1997. A methylene chloride spill was remediated at this facility under Case # 01-03-07-1649-03. Prior operators of this property (in addition to IMTT-Bayonne) include the following: IESI Holding Corp, offices for sanitation collection company from October 1997; and Laboratory Services, Inc., independent chemical testing facility from pre-1984.

Hook Terminaling Company purchased its portion of the facility from the City of Bayonne in 2003. Lafarge North America operated the property during the City of Bayonne's ownership of the property, and continued operations after the property was purchased by Hook Terminaling Company. The site is being remediated pursuant to a Remediation Agreement under ISRA Case #E20030328.

IMTT-BX purchased its portion of the facility from Exxon in April 1993. Prior operators of this property (in addition to IMTT-Bayonne) include the following: International Petroleum Corp. of Delaware, waste oil recycling (primarily motor oils) from July 1998; Exxon Corporation leases a

portion of the property solely for use as staging area (equipment storage) for its environmental remediation from April 1993; SGS Control Services, Inc., independent petroleum testing laboratory from May 1991; Delta Atlantic, performs blending of materials to make aircraft wing de-icer from April 1994; Allchem, trucking terminal from October 1994 to July 1996; and Angus Tank Cleaning, tank cleaning operation and equipment staging area (actual tank cleaning done off-site) from September 1994 to May 1999.

IMTT-CX purchased its portion of the facility from Constable Terminal Corporation in August 1997. Powell Duffryn Terminals, Inc. owned the property until May 1984, when it sold the property to Constable Terminal Corporation.

MAVID SAMSON

ARTHUR S GOLDSTEIN

BRADLEY M. CAMPRELL

THOMAS R. D'BRIEN

KAREN L DILMAN

ROGER J BREENE DAVID N. RAVIN'

BERNARD & DAVIS

PAUL M. COLWELL ROBERT E. NIES

JOHN F CAREY

MOMIE H MHOL

MORRIS MENENFELD

DENNIS M. TOFT JEFFREY M. GUSSOFF

JOHN A. MCKINNEY JE

LAURENCE M SHITH

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April 20, 2006

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ISRA Initial Notice
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Re: IMTT-Bayonne

250 East 22nd Street, Bayonne, New Jersey

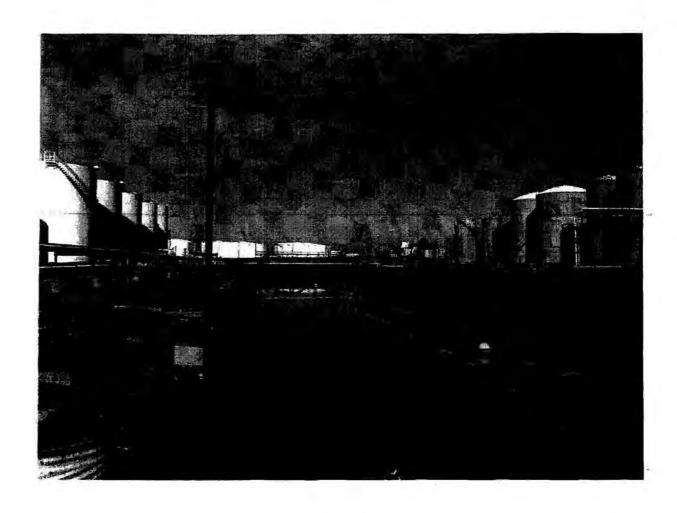
Dear Mr. Bono:

As a supplement to IMTT-Bayonne's application for a non-applicability determination, we are providing this letter to further describe IMTT-Bayonne's operations at the above-referenced facility. IMTT-Bayonne operates a bulk petroleum and chemicals storage and distribution facility. IMTT-Bayonne does not own the products stored at its facility, but merely stores them for a fee. IMTT-Bayonne operates the tank terminal, but the products stored inside the tanks are owned by various customers. Because IMTT-Bayonne does not store its own products, its NAICS code is 493190, which is not subject to the requirements of ISRA.

Thank you for your attention to this matter. Please contact me if you have any questions or require additional information.

Very truly yours,

Dennis M. Joft/ 25







ExonMobil

February, 2000

Remedial Action Selection Report Platty Kill Canal Bayonne, New Jersey

Prepared for:
Bayonne Industries, Inc. and
ExxonMobile
Bayonne, New Jersey

CCH000004

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REMEDIAL ACTION SELECTION REPORT

1.0 INTRODUCTION

1

Bayonne Industries, Inc. (BI) and ExxonMobil have completed this investigation of feasible options to achieve a permanent remedy for contamination potential from the erstwhile Platty Kill Canal (PKC) adjoining their properties in Bayonne NJ. Presented in detail in this report is the Remedial Action Selection (RAS) for one of the two "screened alternatives" (EPA, 1988) described below:

Source Removal with Off-Site Disposal of contaminated Sediments

This approach would likely require constructing support for the lower sidewalls of the canal (below the existing bulkhead depth) prior to dredging and removal of the impacted sediments for off-site disposal and replacement with fill. Some isolation of the canal would be necessary as well during this process along with a detailed examination of localized sediment characteristics.

b. Filling and Containment

This approach includes permanently closing the mouth of the canal and containing impacted sediments in the canal with an impermeable barrier. Prior to sidewall containment, locally occurring dredging materials would be deposited in the channel with accompanying dewatering and capping with an impermeable barrier topped with a layer of soil suitable for planting. The most highly impacted areas or "hot spots" will be removed and/or treated prior to filling and capping.

The Filling and Containment Alternative was chosen to be further evaluated as the most attractive alternative based upon performance, reliability, implementability/constructability, safety and environmental factors. The protection of the waters of the Kill van Kull and the conversion of the dead-end channel left behind during the filling of the waterfront in the last century into a green buffer zone were additional incentives.

Several studies have been performed, or are currently underway, in determining the nature of the contamination potential of the canal. A PKC Interim Remedial Action Report (1995), and Phase I and Phase II Remedial Investigation (RI) Reports (1996 and 1998) that included a comparison with NJDEP published soil standards and sediment criteria have already been filed with the NJDEP. The Phase II RI report identified specific sediment areas which failed to meet expected standards or criteria. The reports included a characterization of the contamination and provide adequate data to estimate the extent of the contaminated sediment. Contamination was minimal at the seaward end of the canal.

The screening of additional remedies was deemed appropriate based on prior comment from the lead regulatory agencies and to conduct the remedial action selection process as prescribed in NAJC 7:26E-5.1. In addition, outlining the specific steps for implementing the Filling and Containment Alternative is necessary to confirm its feasibility and to demonstrate that this selection will be an effective and efficient manner in which to protect the public health, safety and the environment at large. A cursory review of other alternatives is also included in this report in the interest of identifying the full scope of possibilities.

The remainder of this first section is an account of the original history of the canal and an overview of the remedial objectives. Subsequent sections document the formal screening of the two lead alternatives and the development of detail on the current choice. Finally, conclusions and recommendations are provided in Sections 4 and 5.

1.1 Site Description

1.1.1 Bayonne Industries, Inc.

The Bayonne Industries, Inc. site is located on the east side of the city of Bayonne (Hudson County, NJ) in an area often referred to as Constable Hook. The site is now and has since 1983 been operated by lessee IMTT-Bayonne. Figure 1 presents a site location map embracing an area within 1-mile of the site (prepared form the U.S.Geological Survey 7.5-Minute Quadrangle). A detailed site plan of the PKC is also included on Figure 1. The maps indicated the site boundaries of the owners adjoining the PKC (ExxonMobil and BI), the local topography, the general surface water drainage, and general land use patterns. Since both industrial facilities collect and treat all of their stormwater runoff, there is no natural watershed served by the canal.

The area west of the PKC has been used by Bayonne Industries and its lessees as a bulk liquid terminal since 1956. These operations provide storage and transshipment services for fuels-related products, plasticizers, paraffins and other chemicals. Liquid materials are received and shipped by marine vessels, tank trucks, railcars and pipeline. Products are stored in large aboveground tanks surrounded by dikes providing spill containment. BI has not owned the products stored, simply providing warehousing and transfer services. Accordingly, inventory was and is strictly monitored by third parties who have held BI and its successor operator accountable for losses. Prior to 1956, the site was part of a larger configuration of the Tidewater Oil Company refinery operations which began in the nineteenth century.

1.1.2 ExxonMobil

The land adjoining the eastern and northerly runs of the PKC was acquired in several stages by ExxonMobil's predecessor (Standard Oil of New Jersey) between the late 1890s and late 1930s. Between the early 1900s and 1950s various wax manufacturing facilities had been operated and then dismantled in an area along the eastern portion of the canal. As late as 1967,

limited equipment associated with lube oil manufacturing (pipe still unit, phenol plant for refining lube oils also remained in use (Dan Raviv, 1994).

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From 1950 through the late 1960s, the methyl ethyl ketone (MEK) plant north of the canal was in operation. Wax was purified in this facility and oils were removed from the wax in large rotary filters. Subsequently, wax was removed from the filters with MEK. Toluene was also used during the wax processing. At other locations in the ExxonMobil Bayonne facility, wax from the MEK plant was molded into 30 pound cakes for further processing.

By 1974, all the wax and lube operational units in the northern portion of the site, including the MEK plant had been dismantled. Only five AGSTs remained (which stored various wax and petroleum oil products). These in turn were then dismantled. East of the canal, AGSTs are currently used to store various lube and petroleum products. Site remediation of this property is proceeding currently in accordance with an Administrative Consent Order with the State.

1.1.3 Creation of the PKC during Waterfront Development

The Platty Kill Canal is not a natural waterway. A portion of the historic shoreline of the Constable Hook has been overlain on the current site plan and included herein as Figure 2. The composite diagram includes data from a map entitled "Areas now or formerly below Mean High Water-Constable Hook, Jersey City (sic) September 6, 1978, #658-2154. The Platty Kill Pond (PKP) and northern section of the PKC are shown to be constructed about the mouth of the former Platty Kill Creek. Any watershed which the Platty Kill Creek may have served was eliminated by landfill, the riparian rights for which were purchased from the State by Bayonne Industries in 1987. The southern portion of the PKC is shown to be a remnant of that portion of the Kill van Kull surrounded on both sides by fill to leave a "barge slip". This artificial deadended channel has not served a useful purpose for decades when barge navigation in it became impractical.

The length of the Platty Kill Canal, from the dike separating it from the PKP to its confluence with the Kill van Kull is approximately 1100 feet. It is now separated from the Kill van Kull by a sheetpile barrier that was installed in 1991 under the authorization of the U.S.Army Corps of Engineers #16244 and NSDEP (1901-90-0003.2). The PKC now receives a monitored NPDES permitted discharge from Bayonne Industries' water treatment plant along with modestly controlled groundwater exchange and rainfall. Some free product accumulations have been observed in monitoring wells on either side of the canal.

1.1.4 Recent History of the PKC

In July 1993, the U.S. Coast Guard directed that free-phase product seepage control measures be implemented at the mouth of the Platty Kill Canal (at the Kill van Kull) when sheens were observed in the Kill. For its part, Bayonne Industries unsure of the particular circumstances undertook some interim remedial actions (IRA) as outlined in an April 1994 IRA Work Plan approved by NJDEP. The interim actions included the reconstruction of a portion of

the bulkhead, a Phase I investigation to characterize sediments in the Platty Kill Canal, the installation of a subsurface free-product retainage curtain along the Kill van Kull and the installation of an Air-Guard containment system to prevent migration of free-product sheen into the Kill van Kull main stream. The Air Guard proved effective in both controlling outmigration of sheens and trash and also has demonstrated that little landside seepage was occurring into the KVK from the upland Bayonne Industries site. For its part ExxonMobil controls trash and sheen on the eastern side of the PKC mouth with booms and floating absorbent pads. The Air Guard system has also contributed a positive effect on the local water quality in the vicinity of the mouth of the PKC in terms of higher dissolved oxygen concentrations and (as reported in an Air-Guard study) the enhancement of fish populations.

1.2 Remedial Objective

The BI Platty Kill Canal Phase I and II Sediment Investigation Report (November 1996 and March 1998) identified areas of impacted sediments requiring remediation. The objective of the conceptual remedy presented herein is to address the management of those impacted sediments and eliminate the contaminant migration pathway from such sediments to surface water. To accomplish the objective, sediments in the open canal will be addressed actively by "hot spot" removal followed by containment and capping. Any free product released during sediment handling will be contained in the work area and recovered.

Incorporating safeguards into the selected remedial design that eliminate landside free product from migrating into sediment or surface water in the future is a critical secondary objective. Both ExxonMobil and BI have identified land areas adjacent to the PKC where free product has been found on the groundwater table. Free product has also been found in a confined aquifer on the ExxonMobil side of the PKC, adjacent to the northern bulkhead. Active recovery in the future of the free product in these areas is to be conducted under other remediation programs. Design safeguards have been included in the selected remedy here that will restrict landside free oil (product) on the groundwater from entering and recontaminating the sediment area.

2.0 DEVELOPMENT OF ALTERNATIVES

2.1 Remedial Action Selection Screening Process

A selection of two preferred closure scenarios has been screened from a list of 5 possible options (Table 1). These scenarios were selected based on knowledge gained during Platty Kill Pond (PKP) work and the project team's site-specific experience. This document includes a review of those selections and how they follow the guidelines for Remedial Action Selection prescribed in N.J.A.C. 7:26E-5.1.

After the media of interest (sediments and free product) and exposure pathways (surfacewater and groundwater) were defined, alternatives for remediation were developed by reviewing relevant available technologies. Sediment removal and/or sediment containment were considered the most viable response actions. A preliminary review of the other possible remedial actions was also conducted. In all the areal extent and volume of the sediments to be addressed were identified along with the surrounding ground and surface water conditions.

In the approved Platty Kill Canal Phase II Sediment Investigation Report, a recommendation was made to postpone PKC remedial actions until a closure strategy for the adjacent PKP was developed. That process is essentially completed with approval of a formal closure plan hoped for in 2000. This RAS Process (N.J.A.C. 7:26E 5.1) does not resolve all issues related to either regulatory permitting and or technical construction details that need to be addressed. Accordingly, it is recognized that preliminary permitting reviews with appropriate agencies and further detailed technical design evaluation will follow prior to submitting a RAW.

A detailed review of the two most attractive remediation strategies is presented in Sections 2.2 and 2.3. A summary of the other possible responses is included in Section 2.4 to aid in validating the Remedial Action Selection presented in Section 3.

2.2 Alternative No.1 - Source Removal with Off-Site Disposal

2.2.1 Concept Description

The removal of impacted sediments with the contaminant levels above certain nominal screening values drawn from the Site Remediation Program's Bureau of Evaluation and Risk Assessment, Environmental Toxicology and Risk Assessment Unit has been considered in this first option. To achieve the aforementioned threshold levels, the removal of impacted sediments at the canal bottom will require permitted dredging, surface water sediment loading control, free product discharge control, sediment dewatering and pretreatment and post remedial sediment sampling. This removal process would also involve refilling the canal with similar sedimentary material. Additionally, the depth of the extractive dredging could well require extensive structural control to augment the existing bulkhead structures.

Due to the identification of free product on the water table at locations around the bulkhead, this approach would require a delay in implementing until the free product is removed (or additional secondary containment barrier construction was installed).

2.2.2 Technical Screening

The vertical depth of impacted sediments to be removed is approximately fifteen feet. The impacted sediments occur at approximately 12 to 15 feet below the top of the bulkhead. This thickness of sediments can be removed with a clamshell bucket or modified hydraulic excavator to the appropriate depth. However, an extensive bulkhead system would be necessary to provide support against failure of the existing side strata during excavation. In locations where the existing bulkhead is in disrepair, new sheetpile bulkheads with associated tie back supports would be called for.

The dredging of impacted sediments will require a water control system to be designed and installed. This is necessary to ensure that any surface water impacted by the dredging operation would meet surface water discharge criteria for the KVK (or some agreed-upon standards as developed during the Water Quality Certification permitting process).

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Dredging of the impacted sediments in the canal would place portions of the material into suspension in the surface water. A control structure would be needed to handle suspended solids and potentially contaminated water and/or free product. Pilot testing actual conditions would be required to determine sediment loading values and the best available technologies to reduce the total suspended solids concentrations to acceptable levels.

Dewatering of the dredged sediments would also produce a product-contaminated liquid that would require pretreatment prior to processing at the site wastewater treatment plant. This may require the design, permitting and construction of a substantial pre-treatment facility. (It is anticipated that pretreated water would then be diverted to the on-site treatment plant prior to discharge).

Finally, imported sediment would be required to be placed in the PKC once the impacted sediments were disposed of off-site. This sediment is available via dredging from areas located near the facility berths. Sampling and certification of these sediments by the appropriate SRP Bureau would be necessary of course prior to placing them into the PKC.

2.2.3 Regulatory Screening-Source Removal

In addition to the Site Remediation Program (SRP), there are several other State and Federal Agencies having jurisdiction over the process of removing, replacing and/or controlling the sediments in the PKC. The administrative feasibility of obtaining authorization to perform a remedial action of dredging in the PKC cannot be fully known in advance. However, some of the basic issues involving specific Federal and State Agency concerns are summarized below:

Both Federal and State authorization will be required for structurally preparing the PKC to allow for dredging of contaminated sediments from its bed, for isolation of sidewall stratum through the installation of a sealed bulkhead containment system, and for placement of imported dredged material into the PKC to restore pre-existing bathymetry. The U.S. Army Corps of Engineers (USACE) regulates the proposed activity pursuant to Section 10 of the Rivers and Harbors Act of 1899 for all structures and dredging activities conducted in a navigable waterbody. The PKC has been considered nominally as such for the purposes of this report. The dredging of sediments as well as the placement of fill back into the PKC are regulated by USACE under Section 404 of the Clean Water Act. All of the proposed activities are eligible for authorization under these regulatory statutes providing that they are conducted in a manner which is consistent with the Coastal Zone Management (CZM) rules for the State of New Jersey.

The prospect of receiving Federal approval to conduct the alternative remediation activities from the USACE involves input from other Federal Agencies by comment during the

interagency review period. These agencies do not issue "permits" as such, but can strongly influence the final permit decision by USACE. The key Federal Agencies having this input are the U.S. Environmental Protection Agency (USEPA), National Marine Fisheries Service (NMFS), and Fish & Wildlife Service (FWS). The later two will focus on the short and long term impacts of all activities on the local biota and terrestrial ecosystem while the USEPA will focus more on the groundwater and surface water quality impacts. There is no compelling reason why the proposed activities cannot be conducted in a manner which is acceptable to these Federal agencies. However, there are complications for this alternative compared to the selected remedial action of filling the canal. These complications primarily involve both the extent of shoreline stabilization and mode of free product removal prior to dredging the contaminated materials from the PKC. Agency review can thus be expected to include an assessment of the future performance of the extensive structural systems as well as concern for the controls to be employed during dredging (to minimize the release of PKC suspended sediments into the receiving body of water (the Kill van Kull)).

The State of New Jersey will act pursuant to N.J.A.C. 7:7E, Rules on Coastal Zone Management, Section 401 of the Clean Water Act, State Riparian Interests, Waterfront Development Act, and possibly N.J.A.C. 7:14A-1, Discharge to Groundwater Permit. The feasibility of obtaining all of the necessary authorizations on the State level is the same as with the Federal level. The issues will be nearly identical, with both having concerns over surface water and groundwater impacts during construction as well as over the long term. In both Federal and State agency review processes, the assessment of how the stabilized PKC will function for the long term is also critical. Demonstrating that the bulkhead system will always retain sidewall strata will be difficult. From a regulatory perspective, both the selected alternative of filling as well as the presented alternative of dredging and removing PKC sediments carry similar regulatory hot points. The primary difference between the two is that the filling option virtually eliminates future maintenance, minimizes disturbance of sidewall strata, and limits the potential for future migration pathways. This advantage is possibly compromised by a questionable loss of benthic habitat and "open water". In summary, both alternatives involve the same basic regulatory screening procedures and have a similar likelihood of being approved.

2.2.4 Summary

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This alternative appears to be burdened by a significant cost differential, liabilities associated with disposal and transportation of contaminated spoil, and a compromised protection to the KVK's interface with upland contamination problems.

2.3 Alternative No. 2 - Filling and Containment

Due to the volume of undifferentiated sediments that are possibly impacted (approximately 50,000 cubic yards) and the necessity to provide safeguards against groundwater to sediment migration in the remediated areas, the remedial alternative of filling, containment and capping of the PKC has risen to be the remedy of choice.

2.3.1 Concept Description

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On site containment with an overfill of similar sediment material will require the design and construction of a sediment containment cell (SCC). An on site SCC would have several advantages over the Source Removal with Off-Site Disposal alternative, notably that it will provide a physical barrier between the impacted sediments and ground water product plumes that have been identified on the land adjacent to the canal. The containment would be keyed into an underlying clay layer of sufficiently low permeability to prevent any downward contaminant migration. From an implementability/constructability and cost viewpoint, this alternative is a more viable solution with less risk of damage and environmental releases from adjacent structures and utilities than the Source Removal with Off-Site Disposal alternative.

The area from the top of the impacted sediment to surface (freeboard) will require filling to complete the SCC. Filling the freeboard is necessary to provide the structural support to install the impermeable containment walls and cap. Filling the SCC freeboard will be completed with suitable material (i.e. dredge spoils) available locally from the Kill van Kull at BI vessel berths. This maintenance dredging sediment accumulates at the existing marine facilities and has historically been authorized for disposal at either ocean or upland sites. It is recognized that capping and/or draining the storm water to the treatment facility, would be required to keep the SCC from filling with water which could become contaminated and such waters as are derived from the site will be dispatched through the existing NPDES permitted treatment system.

2.3.2 Technical Screening

The containment of the sediments would also result in the least disturbance to the surface water. (The dredging in the vicinity will be taking place under suitable permit provisions in any event.) Preliminary maximum volume estimates of sediments above the several cleanup criteria are approximately 50,000 cubic yards (c.y.). These sediments have been found to contain concentrations of Total Petroleum Hydrocarbons (TPH) ranging from 20,000 to 180,000 parts per million (ppm). These concentrations represent a somewhat heterogeneous distribution (featuring "hotspots") with the general trend decreasing downstream.

In order to accomplish the filling of the canal, initially, the mouth of the canal would be required to be isolated from the Kill Van Kull by installing a bulkhead across the mouth of the PKC. This first step will act to control the mobility of sediments and surface water to the Kill Van Kull, a key evaluation criteria in the selection of this process. Further definition of this task is necessary and will be provided in the Remedial Action Workplan for the PKC.

The second step in the containment process will be to fill the remainder (freeboard) of the canal with sediment of similar physical characteristics. These sediments are readily available from the berths around the IMTT facility. Using dredged material for filling will constitute a beneficial use in this case providing the additional advantage of disposal of material that would otherwise go to an offsite controlled disposal facility. The disposal of residues resulting from

targeted "hotspot" removal in this option can be likely in the Platty Kill Pond closure or a contiguous extension.

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Further filling will be necessary to raise the canal to or somewhat above the elevation of the surrounding banks. This will allow natural precipitation and runoff to be channeled to the on-site water treatment system.

Filling provides structural support for a vertical barrier to be installed inside the current bulkhead limits. (Vertical barrier installation without or prior to filling would require the installation of tiebacks or other structural support) into the banks of the PKC). This would require drilling through contaminated material and the clay barrier found in the area. Filling the canal prior to installing a barrier eliminates this requirement and allows for efficient and economical installation of a vinyl sheet pile system with little resulting structural load or ground water seepage and a barrier of demonstrated impermeability and longevity.

Additional work will be necessary to confirm that the lower clay layer is continuous and that its low permeability provides suitable containment. An investigation of subsurface obstructions that may exist along the walls of the canal is also anticipated. This is necessary to ensure that the selected barrier material can be driven successfully into the clay. Finally, suitable cleanup of rip-rap and residues between the present bank and the newly installed vinyl containment wall be conducted.

2.3.3 Regulatory Screening-Filling

In addition to the overview provided by the Site Remediation Program (SRP), there are several other State and Federal Agencies having jurisdiction over the proposed activity of isolating and filling the PKC with dredged sediment. The following specific authorizations will be required to perform the regulated activities of dredging, disposal into the PKC, and isolation of sidewall stratum through the installation of a bulkhead and liner containment system. The U.S. Army Corps of Engineers (USACE), will review the proposed activity pursuant to Section 10 of the Rivers and Harbors Act of 1899 as well as Section 404 of the Clean Water Act. The proposed containment activities are eligible for authorization under the appropriate regulatory statutes listed above providing that they are conducted in a manner which is consistent with the approved Coastal Zone Management (CZM) rules for the State of New Jersey. Because the activity involves the loss of what is likely deemed open water space (albeit one compromised in the original regional landfill, certain mitigative measures will be required as part of any CZM consistency determination.

The feasibility of receiving approval to conduct these activities is also influenced by other commenting Federal Agencies that review and issue recommendations (adverse or otherwise) to the USACE during the interagency review period. These agencies do not issue "permits" as such, but can strongly influence the final permit decision by USACE. The key Federal Agencies having the greatest influence are the U.S. Environmental Protection Agency (USEPA), National Marine Fisheries Service (NMFS), and Fish & Wildlife Service (FWS). The latter two will be

concerned with impacts of all activities on the local biota and terrestrial ecosystem while the USEPA will focus more on the groundwater and surface water quality impacts. Properly managed and executed, the proposed activities can be conducted in a manner which should be acceptable to these Federal agencies. However, a thorough justification of the selected remedial action will be a necessary part of obtaining this concurrence.

The State of New Jersey will act pursuant to N.J.A.C. 7:7E, Rules on Coastal Zone Management, Section 401 of the Clean Water Act, State Riparian Interests, Waterfront Development Act, and possibly require an N.J.A.C. 7:14A-1, Discharge to Groundwater Permit. The feasibility of obtaining all of the necessary authorizations on the State level largely parallels the considerations carried at the Federal level.

As with any project, the administrative feasibility of obtaining authorization to perform a selected action cannot be fully known in advance of filing application materials. However, encouraging discussions with key regulatory officials as well as the established precedent of a recently permitted similar project assuage initial concerns over the regulatory feasibility. The NJDEP has just authorized the NJTransit to perform filling of the Long Slip Canal on the Hudson River in Hoboken (Permit No. 0905-95-0003.5). The PKC project proposed here is somewhat smaller in scope, but otherwise parallels most of the activities and existing conditions associated with the Long Slip Canal.

2.3.4 Evaluation of Existing Data Gaps

Some data gaps exist in the proposed SCC scenario in some of both the technical and regulatory elements of our closure proposal. None are expected to preclude implementation and these can be addressed in the RI/RAW process. There are two particular matters that we expect specifically to address in the RI/RAW: (1) The lack of a full field confirmation that the in-situ glacial clay material stratum at the bottom of the canal can serve as a containment as it extends to the mouth of the canal, and (2) The identification of any submerged obstructions and/or utilities that may interfere with sheet piling activities along the PKC boundaries that cannot be removed or contained.

2.4 Other Alternatives

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In all, five potential response alternatives were considered in the overall Remedial Action Selection process. This evaluation considered such criteria as implementability, effectiveness, costs, reduction of toxicity/mobility/volume, compliance with applicable or relevant and appropriate requirements (ARARs) and the overall protection of human health and the environment. Observations are summarized in Table 1.

Based on a review of these alternatives then, of the site conditions and experience from remedial activity with the Platty Kill Pond, the containment option has been deemed to be the best overall remedy for the PKC. Containment provides the most direct protection to the surface water, the least mobilization/disturbance of existing sediments, minimal human exposure and the

added protection of providing a barrier to free product migration from all landward sides of the PKC. A limiting factor to the containment alternative is obtaining all the necessary permits in a timely fashion, but neither of the prime alternatives is free of these permit requirements.

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TABLE 1
SUMMARY OF DETAILED EVALUATION OF REMEDIAL SELECTION ALTERNATIVES
PLATTY KILL CANAL

Criteria	Alternate 1 No Action/Monitoring	Alternate 2 Containment	Alternate 3 Dredge and Dispose	Alternate 4 Stabilize in Place	Alternate 5 Bioremediate
Overall Protection of Human Health and the Environment	Human Health and the environment are not protected	Human health and the environment are protected -contaminants are contained	Human health and the environment are protected once contaminants are removed.	Human health is protected since contaminants are stabilized	Human health and the environment are protected since contaminants are remediated
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	Will not meet ARARs	Will meet NJDEP ARARs with deed restrictions and engineering controls	Will meet NJDEP ARARs	Will meet NJDEP groundwater quality ARARs	Will meet NJDEP groundwater quality ARARs with time
long-term Effectiveness and Permanence	Is not effective	Effective - long life to be incorporated into design	Effective only with completed landward free product and groundwater remediation	Effective at permeability of 1x10-7	Effective only with completed landward free product and groundwater remediation
Reduction of Toxicity, Mobility, or Volume	Toxicity - none Volume - none Mobility - none	Toxicity -Low Volume - Low Mobility - High	High Reduction of all	Toxicity -Low Volume - Low Mobility - moderate	Toxicity - Moderate Volume - Low Mobility- none
short-term Effectiveness	Is not effective	High - Complete as soon as containment is in place	Low - requires landward remediation	High	Low - requires landward remediation
Implementability	Very easily implemented	Moderate to difficult	Moderate	Moderate	Difficult
Ability to Protect Against Free product - groundwater Impacts	None	High	Low Without additional controls	Effective at permeability of 1x10-7	Is not effective
Relative Cost	low	Base	Base +50%	Base +>50%	Base +>50%
State Acceptance	Not expected to be a favorable option	Expected to be a favorable option	Expected to be a favorable option	Expected to be a favorable option	Not expected to be a favorable option
Community Acceptance	Not expected to be a favorable option	Expected to be a favorable option	Expected to be a moderately favorable option	Expected to be a favorable option	Not expected to be a favorable option due to time factors

3.0 DETAILED DESCRIPTION OF PROPOSED REMEDIAL ACTION

3.1 Remediation Standards

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The containment remedy addresses the requirement to meet a particular soil or sediment exposure criteria with continuing engineering and institutional controls. This is defined by the Department as a "Restricted use Remedial Action" meaning that the continued use of the engineering and institutional controls are necessary to meet the appropriate standards. Appropriate institutional measures controls will be instituted to control human activity at or near the AOC and to ensure the effectiveness of the containment remedy with time. Provision for the long-term operation, maintenance and monitoring of the containment structure will be planned and included in a RAW to be prepared for the canal closure following the Department's review of this RASR document. Included therein will be provisions the need to maintain a negative hydraulic gradient towards the containment area's sump with engineering controls. The engineering controls will include a mechanism for recovering any free product that may separate from the sediments over time. The planned, long-term use of the area will be as a low impact buffer area in support of adjoining heavy industry.

3.2 Permitting

The basic elements of the project requiring authorization are (1) the dredging of the IMTT berths and subsequent disposal in the PKC, and (2) the construction of bulkhead structures at the mouth and along the sides of the PKC to isolate the capped material. These regulated activities are described in greater detail in the following paragraphs.

It should be pointed out that, as stated earlier, the NJDEP has issued authorization to the NJTransit to conduct dredging and filling of the contaminated Long Slip Canal in Hoboken, on the Hudson River (Permit No. 0905-95-0003.5). The Long Slip Canal covers approximately twice the area and will contain approximately 150,000 to 180,000 cubic yards of dredged material when the project is completed. In contrast, the PKC project will involve at most approximately 40,000 cubic yards of dredged material required to fill the canal. The following basic elements of permitting will apply to the proposed activities specifically related to the coastal permits programs of the State of New Jersey, and the U.S. Army Corps of Engineers.

Dredging and Disposal Activities

It is demonstrably clear that the future requirements for dredging at the IMTT West Side piers alone will provide the requisite quantity of material needed to fill the PKC. Dredging and disposal permit applications for these piers are already in process now based on use of a third-party upland facility if necessary. There are a limited number of these locations.

The dredging activities will include the utilization of a barge-mounted crane and dredged material scow for staging of dredged material. The material to be dredged from each berth will consist primarily of fine-grained sediments that will be removed via closed clamshell bucket and

deposited directly into sealed scows. Once filled, each scow will be transferred to a staging area immediately adjacent to the mouth of the PKC.

The free water associated with the dredged material placed into the scow will be returned to the waterbody after approximately 24 hours of decanting. The decanted dredged material will then be rehandled by either land-based or waterborne clamshell bucket into the PKC near the mouth. A secondary method of movement may be required such as a hydraulic excavator operating along the banks of the PKC to properly disperse dredged material in the PKC. Eventually, as the material accumulates near the mouth and lower reaches of the PKC, dredged material may be moved via truck to the head end of the PKC to efficiently fill the PKC.

Containment Cell Construction Activities

The containment measures to be implemented include a sealing bulkhead at the mouth of the PKC that will be anchored with earth anchors to resist earth pressures. Another bulkhead wall will be driven along the sidewalls of the PKC to isolate sidewall stratum. This bulkhead will be driven as close as possible waterward of the existing bulkhead face and will be installed at the conclusion of all dredging and filling activities. The sidewall bulkhead material will be a vinyl sheet pile having low permeability interlocks and will be driven to a toe elevation that is coincident with the lower clay layer.

Regulatory Authority

Dredging, disposal, and construction activities in the PKC are subject to the following regulatory oversight.

- State of New Jersey Waterfront Development Act.
- State of New Jersey Rules on Coastal Zone Management (NJAC 7:7E).
- Federal Consistency Determination pursuant to the Federal Coastal Zone Management Act as so issued by the State of New Jersey.
- State of New Jersey Water Quality Certification pursuant to Section 401 of the Clean Water Act.
- State Riparian Interests.
- Section 10 of the Rivers and Harbors Act of 1899.
- Section 404 of the Federal Clean Water Act.
- Possible requirement of NJPDES Discharge to Groundwater Permit (N.J.A.C. 7:14A-1, subject to determination by the Bureau of Operational Ground Water Permits.
- Office of Sediment and Dredging, NJDEP

Note: It is assumed for the purposes of this analysis that the dredged material for the PKC containment will be from nearby berths on the KVK. Therefore no NJPDES Discharge to Surface Water will be required to dewater these sediments because the dredged material being dewatered is from the same waterbody.

Environmental Assessment of Potential Impacts and Other Regulatory Considerations

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The act of dredging and disposal in the NY/NJ Harbor areas involves several regulatory reviews. Fortunately, in the State of New Jersey, a guidance manual has been developed to address these issues. In this manual, dredged material disposal alternatives have been categorized to include open ocean disposal, or in most cases disposition at a confined disposal facility, a permitted containment area, a subaqueous disposal pit, and a nearshore and upland confined disposal facility (CDF). In general, with the exception of material that is eligible for the very strictly controlled ocean disposal, most dredged material in the NY/NJ harbor area has contamination levels which have required the alternative disposal methods to be employed.

In accordance with the publication entitled <u>The Management and Regulation of Dredging Activities and Dredged Materials in New Jersey's Tidal Waters</u>, the alternative of placing dredged material into open water or wetlands is classified by the State of New Jersey to be "containment". Dredged material "containment areas" are usually created by first constructing a bulkhead or berm and then filling the enclosed open water or wetland area.

Because a containment area is generally a wetland or open water area, the potential environmental impacts of creating a containment area depend greatly upon the geographic location and present ecological function or value of the area in question. The permanent loss of benthic, open water or wetlands are the primary long-term impacts to be evaluated. Short-term impacts to be considered include those of surface water quality and benthic toxicity impacts resulting from the dispersal of sediments as a result of the containment area construction (i.e. filling of the PKC).

Additional impacts to be considered include those associated with what may happen if the "contaminated" dredged material placed into the PKC is not adequately isolated. These include potential ground water impacts, marine ecosystem and aquatic biota impacts. The impacts of a nearshore containment area are essentially identical to those associated with an upland CDF, the only difference being the terrestrial environment in which it is located.

The creation of upland or wetland areas by filling open water or wetland environments is a regulatory concern because of Coastal Zone Management rules. Filling in natural water areas is discouraged and filling wetland areas is prohibited. In most cases, the dredged material being placed in a containment area is more contaminated than the surrounding environment. However, in the case of the PKC, the sediments are much more contaminated than those from the outside shipping berths. (These areas were dredged in late 1997 and early 1998).

Exchange of waters from the PKC with the Kill van Kull waterway has been previously controlled through the construction of an isolation bulkhead at the mouth of the PKC. If the

selected remedial action is followed, the dredging and disposal activities can and will involve addressing the following key points:

- The filling of the PKC requires a demonstration that there is no practicable or feasible land alternative available for dredged material disposal.
- It is preferable that containment areas be located in areas impacted by similar levels of existing sediment contamination as the dredged material proposed for disposal in the area.
- Locating a dredged material containment area site will be evaluated using the Rules on Coastal Zone Management.
- The containment area bulkhead must be designed and constructed to ensure maximum isolation of contaminants.
- Final capping of the created upland or wetland substrate area may be required to ensure long-term isolation of containments.
- Long term monitoring of the containment area site and surrounding environment may be required to confirm adequate isolation.
- Construction of a containment area for dredged material will result in the loss of open water habitat in the case of the PKC. Mitigation for this loss may be required, and in this case an in-kind replacement may not be possible. Therefore, proposed out-of-kind mitigation may be appropriate to accommodate these requirements.
- Dredging and disposal will require sampling and testing to be performed on the material to be dredged in order to assess the characteristics of the bulk sediment as well as the suspended sediment phase during dewatering.

The proposed activities contained in the RASR raise several regulatory concerns that will require diligent and thorough responses. Key agency stakeholders in this endeavor include the National Marine Fisheries Service, Fish and Wildlife, and the Environmental Protection Agency. These agencies have similar concerns with those outlined in the NJ Rules on Coastal Zone Management.

3.3 Sealing the Mouth of the Canal

A steel bulkhead structure supported by outboard batter piles has been in place at the mouth of the PKC since 1991 when it was authorized and constructed. This structure has been acting as barrier to prevent free product from entering the PKC. Supplemented by the Air GuardTM containment system installed in 1995 at the outboard end of the PKC, these control structures have functioned effectively for their intended purpose. However, to properly contain PKC sediments and dredged material to be placed in the PKC, a more substantial and structural bulkhead must first be installed. The new bulkhead at the mouth will be an anchored steel sheet pile system. The sheet piles will act as a barrier to contain dredged sediments and will be keyed into a deep clay layer to contain subaqueous PKC sediments. The new bulkhead will be driven upland of the existing sheet pile dam so that the dam can remain in place during construction. The existing sheet pile dam structure and Air GuardTM containment systems will remain in place

during construction and will be integrated with the control measures to minimize impacts to the Kill van Kull (KVK) as site water is dewatered and PKC filling proceeds.

Installation of the sheet pile bulkhead at the PKC mouth will be the first construction activity and is one of the most critical structural elements of the project. Properly designed to withstand earth pressures, surcharge loads, and hydrostatic forces, this approximately 75 foot long bulkhead will seal the mouth of the PKC. Prior to driving the sheet piles, the interlocks will be sealed with a waterstop product such as Adeka Ultra Seal® A-50 or equivalent. This product is a liquid rubber that expands when in contact with water. After initial air cure the product becomes a stable polymeric rubber and has a proven track record of success for similar applications. The driving of the sheet pile will be done from either land or waterborne crane utilizing conventional pile driving equipment. Upon completion of the driving, an exterior wale system will be installed approximately two feet above the mean high water line.

The horizontal wale system is designed to transfer earth pressure loads into the ground anchors. The ground anchors are installed through the wale system and will require the use of a proprietary anchorage system. Ground anchors will be drilled from a barge mounted drill rig on the outboard end of the bulkhead and will be angled downward approximately 30-40 degrees off horizontal. The steel tendons of the anchor system will be placed into the drilled earth and full grouted in place. The grout acts together with the soil to provide the resistance required to develop the designed capacity. Each ground anchor will be tested upon completion in accordance with standard accepted practices. The anchors will be sealed off at the wale with cover plates and will be a "double corrosion protected" type to ensure long service life. In addition, steel sheet pile material will be marine grade steel that is corrosion resistant and will be coated with a high grade epoxy coating system to provide extended service life.

3.4 Site Preparation

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Selected areas along the perimeter of the PKC have been impacted with floating product. During the site preparation phase of the Remedial Action, free product will be remediated and recovered as practicable. The areas to be addressed include the northern terminus of the PKC adjacent to the PKP, collapsed bulkhead areas and isolated miscellaneous locations along the canal. Specific locations and a designed approach for each area will be included in the RAW.

3.5 Hot Spot Removal

The most highly impacted areas or "hot spots" will be removed and or treated prior to filling and capping. As practicable, these defined areas will be addressed through direct disposal, stabilization or incorporation into the plans for the PKP remediation. Specific areas will be defined in the RAW and, as scheduling requires, into the closure plans for the PKP. At this point, the volume of "hot spot" materials calling for actual removal has been estimated at less than 10,000 cubic yards, a volume which could be accommodated in the Pond or in a modest extension thereof into the canal.

3.6 Filling with Dredged Material

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After the bulkhead at the mouth is sealed and hot spot and surface cleanup complete, the PKC will be ready to receive navigational dredged material from the nearby IMTT berths. This material will have been placed into sealed scows and allowed to decant for approximately 24 hours prior to placement. All dredged material handling and transfer areas will be contained by silt curtains and debris booms to minimize impacts. All clamshell buckets used during dredging and rehandling will be closed type, such as the Cablearm® bucket or equivalent type. This will minimize release of sediments from the bucket.

Loaded dredged material contained in sealed scows and placed adjacent to the mouth of the PKC will be rehandled by crane and clamshell bucket into the PKC. As the dredge material forces the PKC surface water out, the water will be collected and treated as appropriate through the existing water treatment plant.

It is anticipated that the PKC will require approximately 30,000 c.y. of material in order to contain existing bottom sediments in the canal and to achieve a finished grade that is close to existing. The final placement of fill material will require the use of modified dredged material which will be amended to provide a surface which can support light vehicular traffic. The surface of the filled PKC will be graded to allow for containment of all storm water runoff that shall be managed and routed to the existing authorized treatment facility. At the conclusion of the filling process, the existing exterior steel sheet pile dam will be completely removed.

3.7 Containment

3.7.1 Containment Description

Containment of the PKC will consist of engineering control measures, by physical mechanisms, to contain and stabilize the dewatered contaminated soils within the PKC. Physical mechanisms for containment will consist of utilizing the existing low-permeability soil substrata, located beneath the existing contaminated soils, as the base of the containment. The sidewalls of the contaminated soil will be contained with the installation of vinyl sheet piling that will include a waterstop joint sealant filled within the gaps of the interlocking section of the sheet piles. Finally, an engineered cap, as detailed in Section 3.8 herein shall contain the uppermost portion of the contaminated soil.

3.7.1.1 Low-Permeability Soil Sub-Stratum

The existing sub-strata soil beneath the existing contaminated soil, within the PKC, consists of an approximate 15-foot thick layer of clay, maintaining an estimated hydraulic conductivity of 1x10⁻⁷ cm/sec. This low-permeability soil sub-strata will form the base of the containment in which the vinyl sheet piling, described below, shall be driven into to form an impermeable seal. Further soil borings shall be required within the confines of the PKC to

confirm the sub-strata depths, thickness, and hydraulic conductivity prior to implementation. Refer to Detail on Figure 1 for sectional view of proposed containment scenario.

3.7.1.2 Vinyl Sheet Piling

As discussed, the sidewalls shall consist of vinyl sheet piling, which will include a waterstop joint sealant filled within the gaps of the interlocking section of the sheet piles. Vinyl sheet piling is a readily available material with an installation track record of approximately ten years. Additionally, there are several sheet piling contractors located in the Bayonne area that have performed marine installations of vinyl sheet piling in the New Jersey/New York area. Vinyl sheet piling has been selected as the sidewall containment control for the PKC for the following reasons:

Chemical Durability:

Vinyl is one of the most chemically durable polymers known and has demonstrated resilience, in extreme conditions, to over 75 percent of 605 concentrated chemicals. Vinyl is chemically compatible with the known contaminants contained within the PKC and would be resistant to oxidation, as opposed to the potential rusting of steel sheet piling.

Strength:

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Vinyl sheeting is engineered to provide outstanding flexure strength, tensile strength and creep limited strength subsequent to installation. The vinyl sheeting will provide excellent long-term strength characteristics for the application and proposed depths required to contain the sidewalls of the PKC.

UV Resistance:

Vinyl sheeting does not degrade in sunlight since it is made from weatherable vinyl that resists ultra violet degradation. Titanium Dioxide and additional ultra-violet inhibitors are added to the vinyl used in the manufacturing of vinyl sheet piling to eliminate the negative effects of sunlight. Additionally, the proposed application of the vinyl sheet piling as the sidewall containment of the PKC will not be exposed to sunlight upon completion of construction, see Detail on Figure 1.

Permeability/Transmissivity:

The entire surface area of vinyl sheet piling is 100 percent impermeable. The sheet pile interlocks, with a waterstop joint sealant applied, have extremely low permeability rates, on the order of 2.5×10^{-10} cm/sec (as reported by Materials International, Inc.). In studies conducted by U.S. Army Corps of Engineers, CHMM, and EA Engineering, Science and Technology, Inc., it was determined that, "Sheet piles are relatively more impermeable than slurry walls. The vast majority of the sheet pile surface area is impermeable, with use of a joint sealant further

minimizing potential leakage through the wall. A slurry wall's entire surface is permeable and will allow low rate flow through a large surface area. Calculations indicated that the actual throughput volume of water penetrating the sheet pile wall will be less than through a low permeability slurry wall."

Consistency:

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An exceptionally high reliability level of consistency is credited to vinyl sheet piling because it is manufactured by continuous extrusion. Quality control of raw materials combined with repeatable manufacturing processes result in consistent product performance.

Impact Durability:

Vinyl sheet piling is designed to handle the rigors of typical steel sheet piling installation procedures. Vinyl sheet piling have a minimum impact strength requirement of 11,000 inch pounds per square inch. Vinyl sheet piling must have this high level of impact resistance due to the immense impact required during installation.

Installation:

Vinyl sheet piling is lightweight and easy to manage. It is easily installed in areas with high water tables and surface water. It can also be installed on highly sloped surfaces and in areas of limited access. Vinyl sheet piling is typically installed using commercial/conventional vibratory hammers weighing up to 3,500 pounds.

To ensure proper installation of the vinyl sheet piling, large objects, such as defunct utility pipes, boulders, or building debris, will have to be removed by mechanical methods during installation of the vinyl sheeting. Being that the vinyl sheeting panels will extend to approximately 40 feet in depth, large objects would be removed by either an excavator, for shallow removal objects (0-20 feet in depth), or a clamshell operated by a crane, for deeper removal of objects (20-40 feet in depth). A pre-construction boring program would be recommended to determine the potential for encountering objectionable objects at or near the proposed locations of the vinyl sheet piling.

3.8 Capping

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The proposed impermeable cap for the PKC shall consist of a four component composite layer cap, which, combined is a 2½-foot vertical cap.

The composite cap layers, from top to bottom, shall consist of a vegetated top cover layer, a drainage sand layer, a textured high density polyethylene (HDPE) impermeable geomembrane, and a bedding layer. See Detail on Figure 1 for a sectional detail of the proposed impermeable cap.

3.8.1 Vegetated Top Cover Layer

The vegetated top cover will be designed and constructed to maintain vegetative growth and to effectively minimize erosion without the need for contingency application of fertilizers, irrigation, or other non-applied materials to ensure viability and persistence. However, fertilizers, water and other materials will be applied during the capping construction or post-closure period, if necessary, to establish vegetation or to repair damage.

The vegetated top cover layer will be planted with persistent species that will effectively minimize erosion, and that do not have a root system that will penetrate beyond the vegetative and drainage layer.

The final top slope shall be, at a minimum, between three and five percent (i.e., 0.03 ft/ft and 0.05 ft/ft) after allowing for settling and subsidence, and a maximum slope of 33 percent (i.e., 3 Horizontal: 1 Vertical). For the slopes exceeding five percent, the maximum erosion rate shall not exceed 2.0 tons/acre per year using the USDA Universal Soil Loss Equation (USLE).

The vegetated top cover will contain a surface drainage system capable of conducting rainfall runoff across the cap without forming erosion rifts and gullies.

3.8.2 Synthetic Fabric Filter

To prevent clogging of the drainage sand layer, a synthetic fabric filter will underlie the vegetated top cover. The geosynthetic filter openings will be sized in accordance with a criteria that takes into consideration the soil found in layers located adjacent to the geotextile fabric.

3.8.3 Drainage Sand Layer

Constructed directly beneath the vegetated top cover layer, as described in Section 3.8.1, will be a drainage sand layer. The soil materials that will be utilized to construct the drainage sand layer will be free of organic material and have less than five percent of the material by weight passing a No. 200 sieve. The drainage sand layer will be constructed and graded in accordance with the following requirements:

- (i) The minimum thickness of the drainage sand layer shall be 12-inches and have a minimum coefficient of permeability of 1x10⁻³ centimeters per second.
- (ii) The drainage sand layer will have a final bottom slope of at least five percent to allow for settling and subsidence.
- (iii) A synthetic fabric filter shall overlie the drainage sand layer.
- (iv) The drainage sand layer will be designed so that discharge flows freely in the lateral direction to minimize head on and flow through the low permeability layer.

3.8.4 Textured High Density Polyethylene (HDPE) Geomembrane Layer

The proposed impermeable layer, to be installed directly beneath the drainage sand layer, of the proposed cap design shall consist of a HDPE geomembrane. The HDPE geomembrane shall have a maximum coefficient of permeability of 1x10⁻¹² centimeters per second. Additionally, the HDPE geomembrane has a chemical and physical resistance to the waste materials contained in the PKC.

An appropriate HDPE geomembrane will be selected for the impermeable layer of the cap design for the following reasons:

Chemical Resistance:

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Chemical resistance to petroleum contaminated soils potentially found in the PKC.

A HDPE geomembrane will meet and/or exceed the closure requirements under 40 Code of Federal Regulations (CFR) Part 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, And Disposal Facilities.

The HDPE geomembrane shall be placed on a five percent minimum slope to promote gravity drainage and a 33 percent maximum slope to ensure stability of the capping system.

3.8.5 Sand Bedding Layer

Installed directly beneath the HDPE geomembrane will be a sand-bedding layer. The bedding layer will be located above the compacted dredge spoils layer.

The bedding layer shall be free of organic material and consist of a sand or loamy sand material. The bedding layer shall be free of particles greater than three inches in any dimension.

3.8.6 Capping Subgrade Preparation

Prior to installation of the proposed cap, the PKC shall be graded and compacted to 2½ feet below the proposed final contours, to be designed. The subgrade shall be grade to a minimum slope of five (5) percent and a maximum slope of 33 percent. All objectionable materials, that may undermine the proposed cap's integrity, shall be removed or buried on site under the direction of the project engineer.

4.0 CONCLUSIONS

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Five remedial action alternatives were evaluated and two were screened further as part of the RAS process for the PKC. Based on this investigation, the "Containment and Capping" of the impacted sediments was selected as the most efficient approach and one providing the highest level of protection to human health and the environment, especially when considering the surrounding conditions and future free product remediation needs of the neighboring property. The following specific conclusions are presented:

- Five remedial alternatives were identified and evaluated for this RASR. Two of the alternatives were screened and the containment option was selected based on performance, reliability, constructability, safety and environmental protection factors.
- 2. Sediment removal as a remedy would require significant disruption of the canal with impact on the banks of neighboring property and heightened risk to the Kill van Kull. This would require invocation of a number of control mechanisms which in turn would involve design and testing prior to implementation. This process will likewise require permits with relevant time delays for their review. Additionally, migration of landward contaminants into the replacement sediments would for the most part not be satisfactorily addressed without installation of a physical barrier.
- 3. The selected containment of the sediments in the canal with subsequent filling to grade with natural materials and a cap will as well require several stages of construction and associated permitting. However, construction for this option is expected to be much less complicated than for other remedies and the required permits no more difficult to obtain. There is a distinct advantage in this approach in that it will expressly eliminate the possibility of landward containments migrating into the residual sediments

5.0 RECOMMENDATIONS

The following recommendations are presented for action during the review of this RASR in anticipation of the needs of the followup RAW:

- 1. Initiation of an investigation of the extent of the glacial till "bottom clay".
- Characterization of the supernatant water quality in the canal.

- 3. Conduct of pre-permitting conferences with all the interested agencies.
- 4. Investigation of the construction details of the existing bulkheads.
- Development of a further detailed design of the management of residual "hot spot" materials and the movement of dredged materials into the canal.

6.0 REFERENCES

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Parsons Engineering Science, Inc., Exxon Bayonne Plant Free Oil Recovery Project (FORP), Results of Field Investigation for Free Oil Recovery Delineation and Basic Design, March 1998 (Revised March 1999)

DRAINAGE SAND LAYER 60 MIL TEXTURED HDPE GEOMEMBRANE BEDDING LAYER - PLATTY KILL CANAL/DREDGE SPOILS (REGRADED AND COMPACTED) ERMEABLE CAP DETAIL PROPOSED DAM STRUCTURE BULKHEAD

DAM DETAIL

SLUDGE VOLUME CALCULATION

APPROX. DIMENSIONS

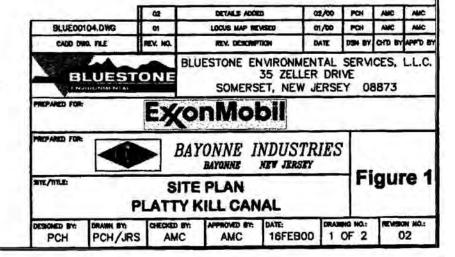
[830 FT. X 75 FT. X 15 FT. (SLUDGE DEPTH)] +

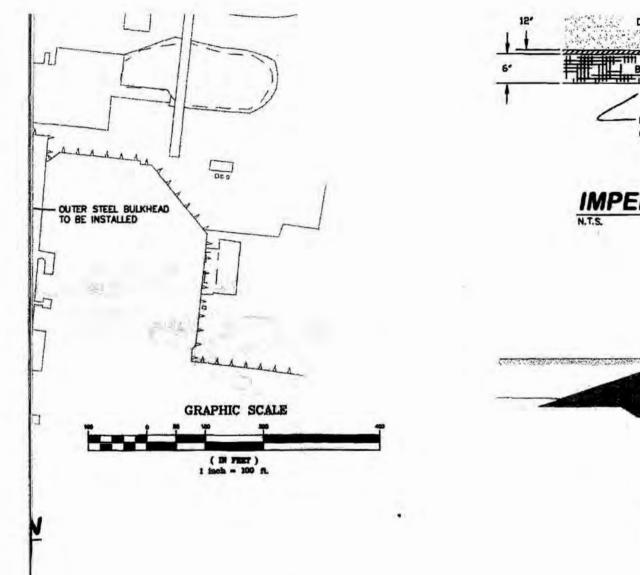
[230 FT. X 115 FT. X 15 FT. (SLUDGE DEPTH)]

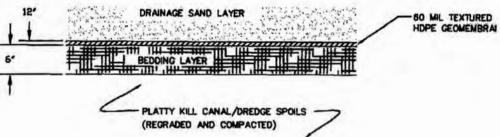
SLUDGE VOLUME =

1,330,500 CU. FT. OR

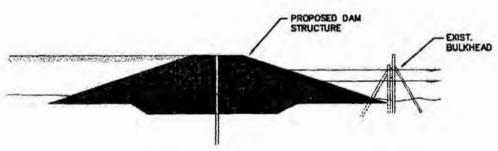
49,280 CU. YDS.



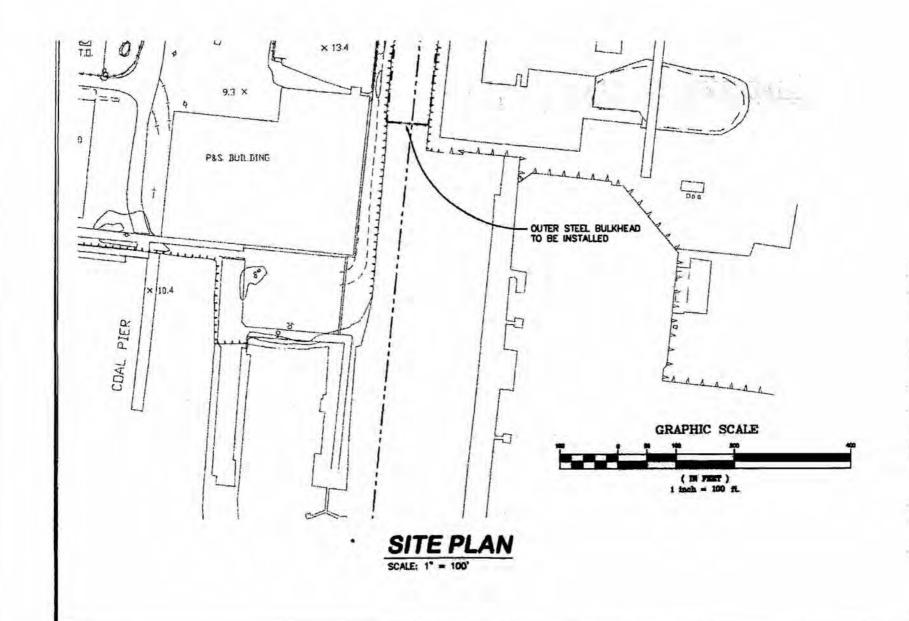


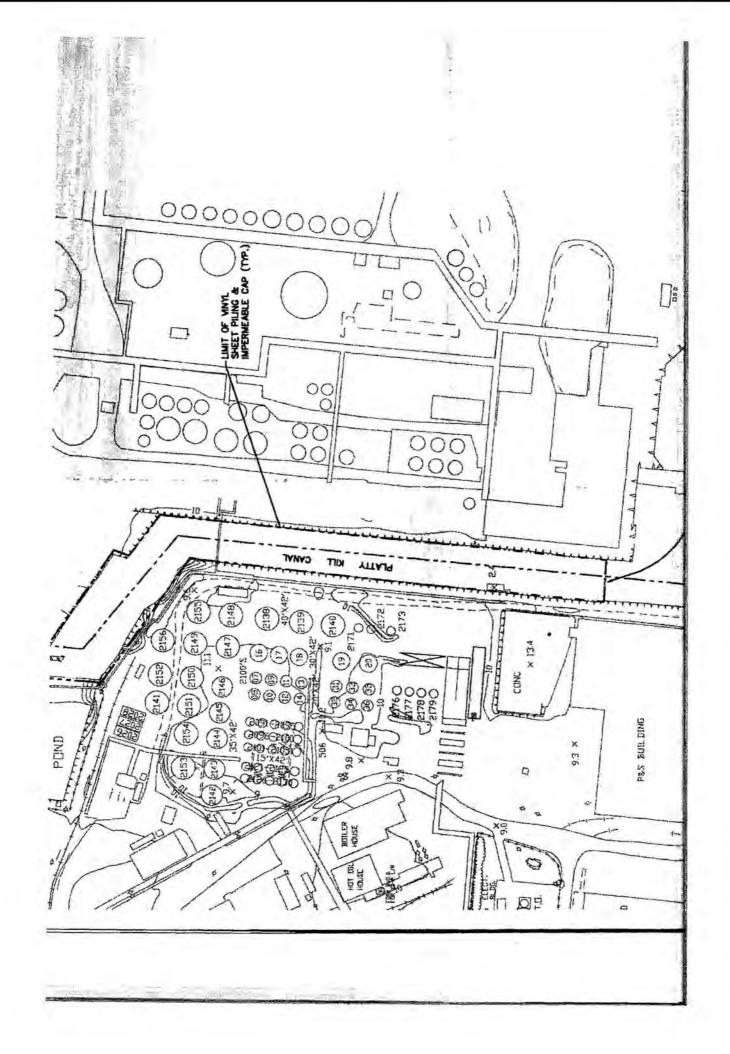


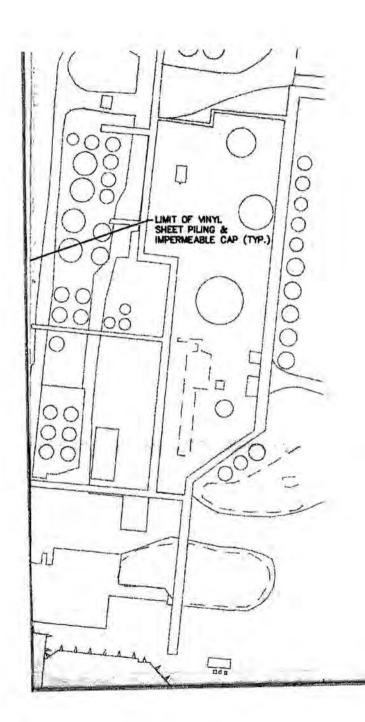
IMPERMEABLE CAP DETAIL



DAM DETAIL

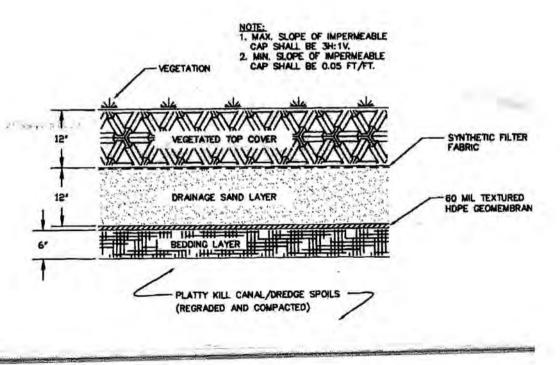


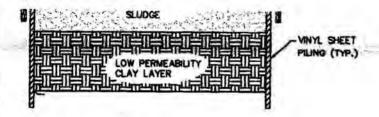






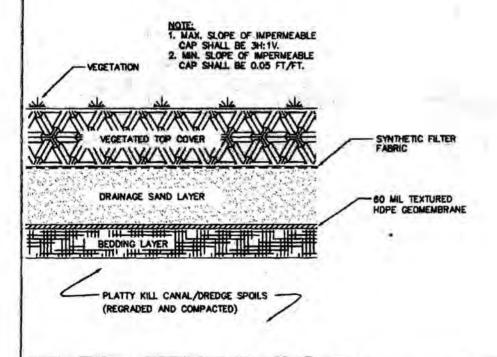
CANAL CONTAINMENT SECTION





ANAL CONTAINMENT SECTION

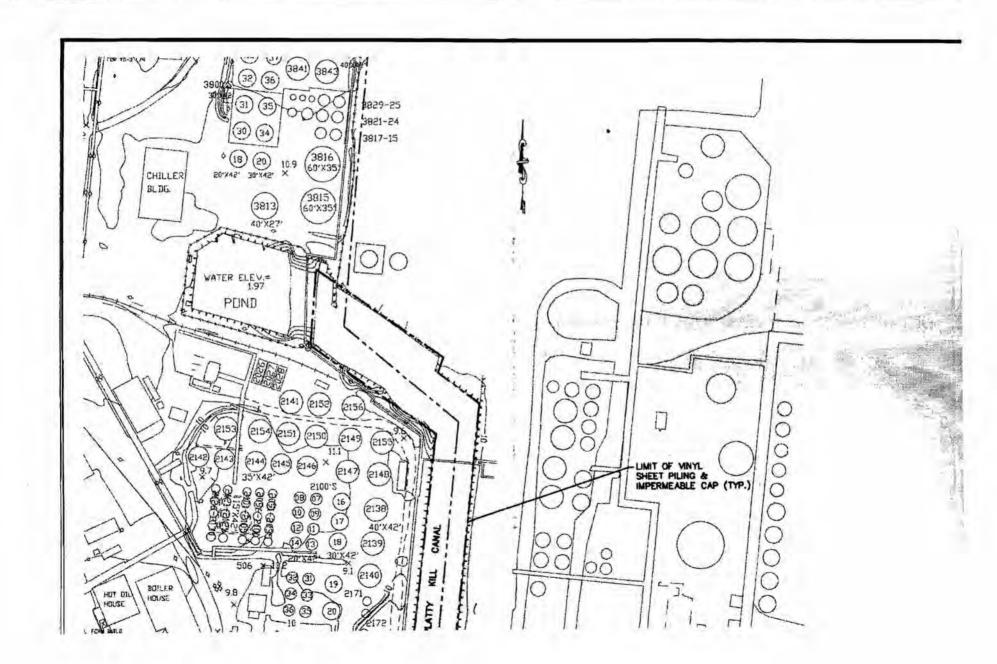


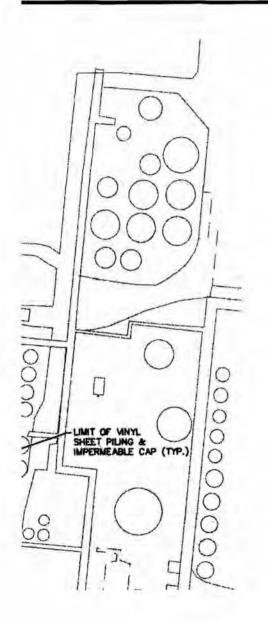


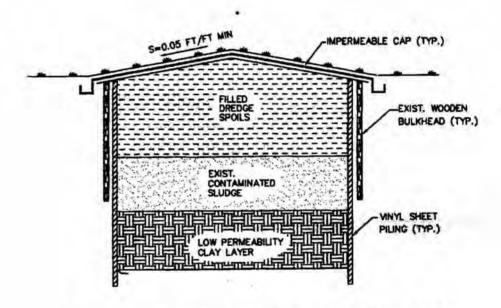
SLUDGE VOLUME CALCULATION

APPROX. DIMENSIONS

[830 FT. X 75 FT. X 15 FT. (SLUDGE DEPTH)] +

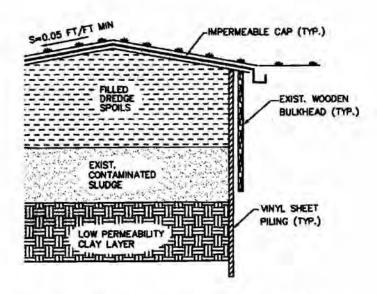






CANAL CONTAINMENT SECTION

NOTE: 1. MAX. SLOPE OF IMPERMEABLE CAP SHALL BE 3H: 1V. 2. MAN. SLOPE OF IMPERMEABLE



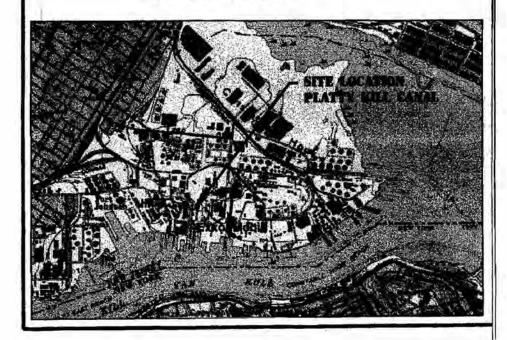
CONTAINMENT SECTION

GENERAL NOTES:

- BASE MAP PROVIDED BY IMIT. BLUESTONE ENVIRONMENTAL SERVICES, LLC IS NOT RESPONSIBLE NOR MAKES CLAIM FOR ACCURACY AND/OR LOCATION OF SITE FEATURES.
- 2. THIS MAP SHALL NOT BE REPRODUCED WITHOUT THE WRITTEN CONSENT OF BLUESTONE ENVIRONMENTAL SERVICES, LLC.

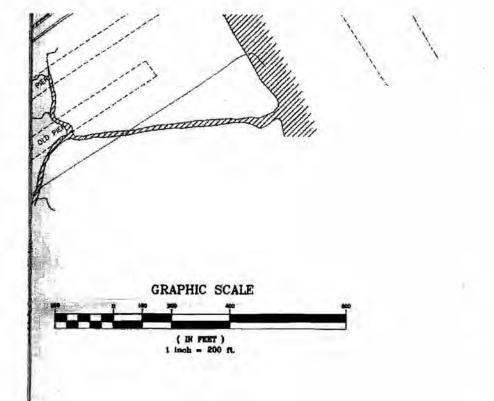
LOCATION MAP:

SCALE: 1" = 2000' (APPROX)



NOTE:

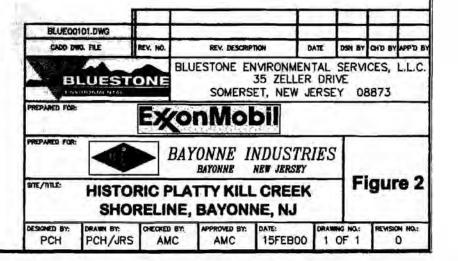
1. MAX. SLOPE OF INPERMEABLE
CAP SHALL BE 3H:1V.
2. MIN. SLOPE OF IMPERMEABLE

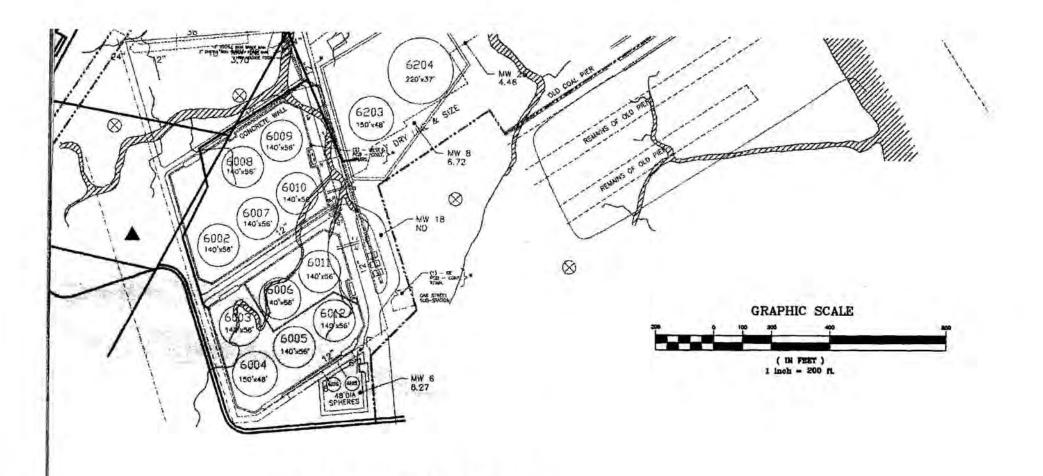


FORMER 19TH CENTURY SHORELINE

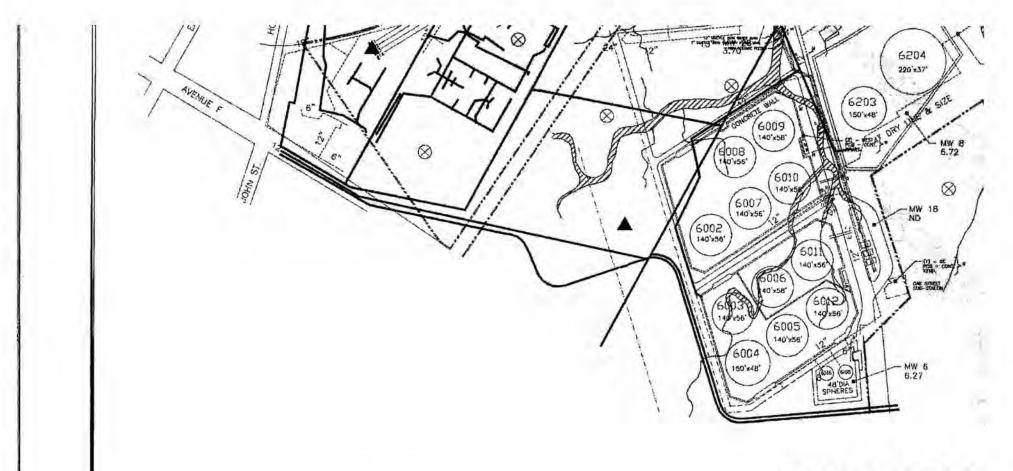


DESCRIPTION	EXISTING
MONITORING WELL AND DESIGNATION	• MW18
NEW WELLS	\otimes
NEW WELLS	
FRESH WATER LINES	
UTILITIES (GAS & ELECTRIC)	
FIREWATER LINES	a month delication
EDGE OF CANAL	-
TANKS	(5057) 95'v42')

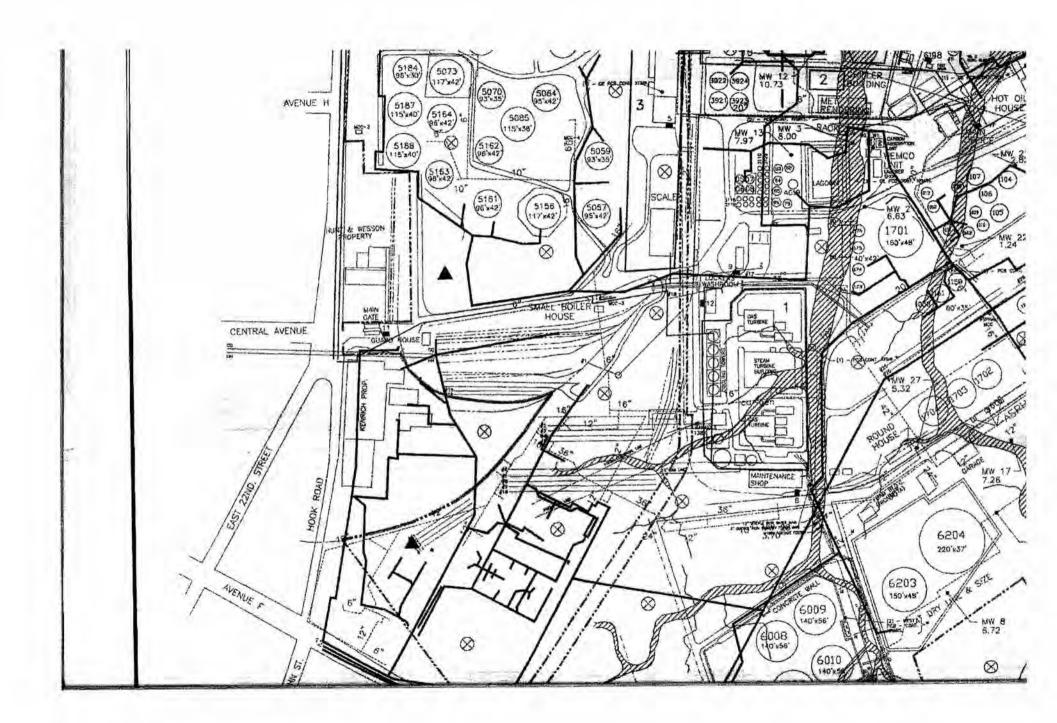


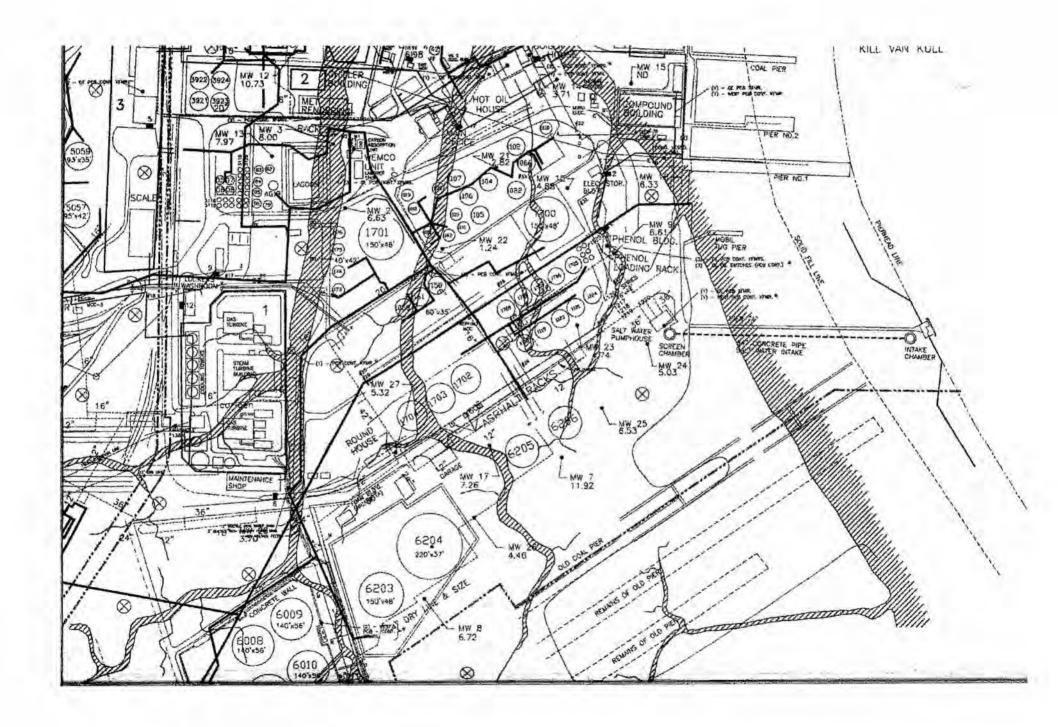


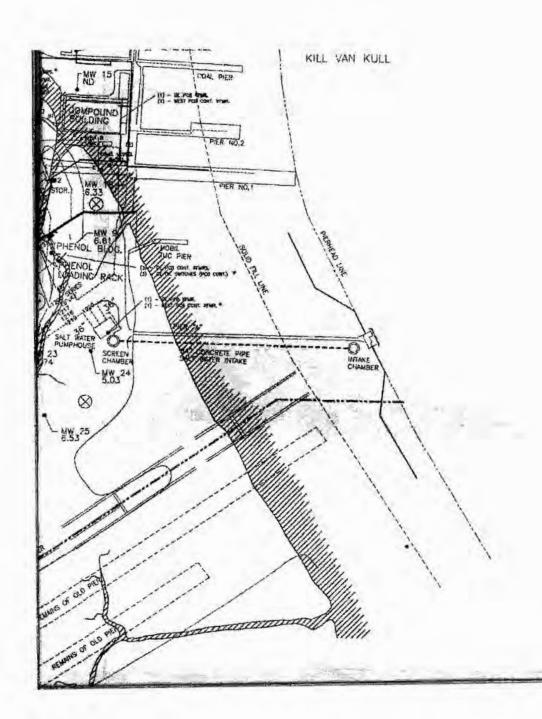
EXISTING SITE PLAN SCALE: 1" = 200'



EXISTING SITE PL







LEGEND:

FORMER 19TH CENTURY SHORELINE



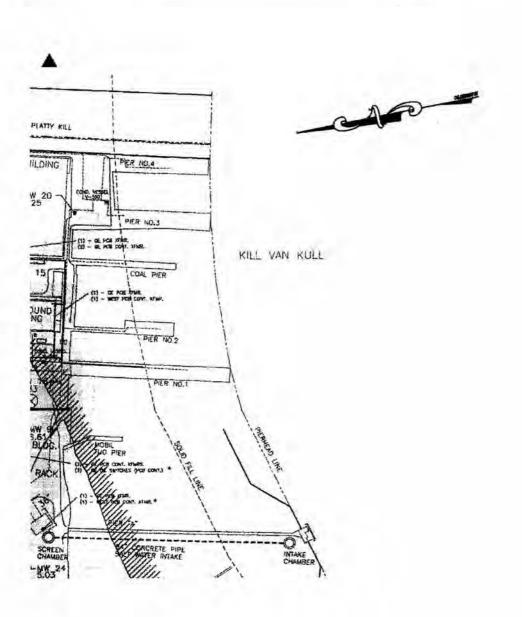
DESCRIPTION

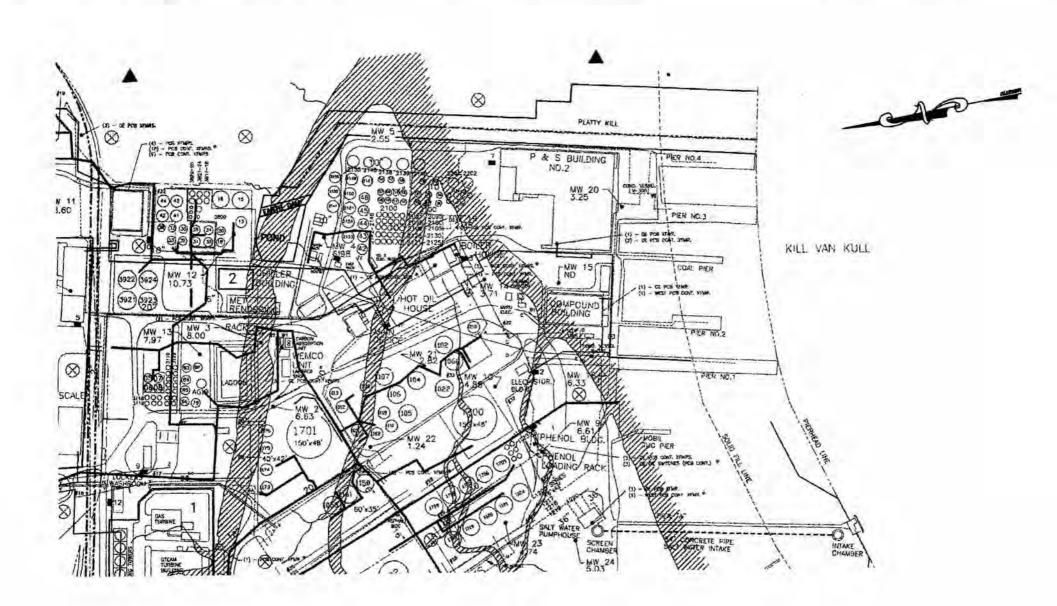
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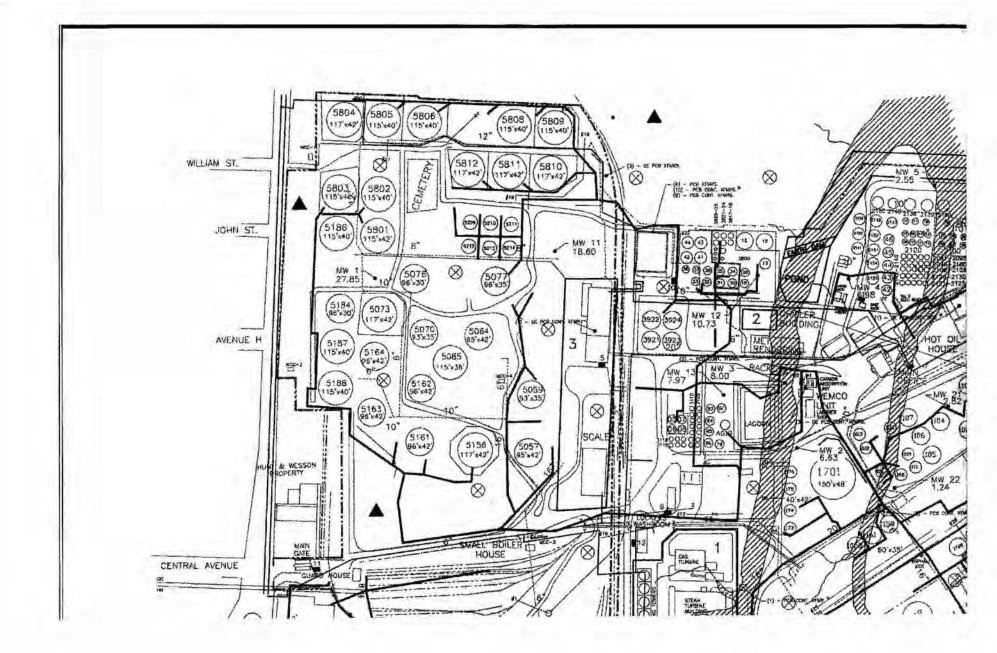
MONITORING WELL AND DESIGNATION

■ MW-18.

me sometimes







Standard Oil

From Wikipedia, the free encyclopedia

Standard Oil (Esso) was a predominant integrated oil producing, transporting, refining, and marketing company. Established in 1870 and operating as a major company trust until it was dissolved by the US Supreme Court in 1911, it was one of the world's first and largest multinational corporations.[1]

Contents

- 1 Early years
- 2 Business strategy of Standard Oil
- 3 Monopoly charges, anti-trust litigation, and breakup of the Standard Oil group
- 4 Legacy
- 5 Successor companies
- 6 Notes
- 7 See also
- 8 Bibliography
- 9 External links



Standard Oil Refinery No. 1 in Cleveland, Ohio, 1899

Early years

Standard Oil began as an Ohio partnership formed by the well-known industrialist John D. Rockefeller, his brother William Rockefeller, Henry Flagler, chemist Samuel Andrews, and a silent partner Stephen V. Harkness. Using highly effective and (later) widely criticized tactics, the company absorbed or destroyed most of its competition in Cleveland, Ohio; and later throughout the northeastern United States, putting numerous small corporations out of business.

In the early years, John Rockefeller dominated the combine, for he was the single most important figure in shaping the new oil industry. [1] He quickly distributed power and the tasks of policy formation to a system of committees, although always retaining the largest shareholding in the company. Authority was centralized in the company's main office in Cleveland, yet within that office decisions were arrived at in a cooperative manner. [2] In response to state laws attempting to limit the scale of companies, Rockefeller and his partners had to develop innovative ways of organizing so that they could effectively manage their rapidly expanding enterprise. In 1882, they combined their disparate companies, spread across dozens of states, under a single group of trustees. This organization proved so successful that other giant enterprises adopted this "trust" form. At the same time, state and federal laws sought to counter this development with "antitrust" laws.

The state of Ohio successfully sued Standard Oil, compelling the dissolution of the trust in 1892. Standard Oil fought this decree, in essence separating ff only Standard Oil of Ohio without relinquishing control of that company. Eventually, the state of New Jersey changed its incorporation laws to llow a single company to hold shares in other companies in any other state. Hence, in 1899, the Standard Oil Trust, based at 26 Broadway in New

York, was legally reborn as a holding company - a corporation known as the Standard Oil Company of New Jersey (SONJ), which held stock in forty-one other companies, which controlled other companies, which in turn controlled yet other companies, in a conglomerate that was seen by the public as all-pervasive, controlled by a select group of directors, and completely unaccountable.[3]

Thus, in due course, the U.S. Justice Department sued Standard Oil of New Jersey under the federal anti-trust law, the Sherman Antitrust Act of 1890. In 1911, the Supreme Court upheld the lower court judgment, and forced Standard Oil to separate into thirty-four companies, each with its own distinct board of directors. Standard's president, John D. Rockefeller had, by then, long since retired from any management role, but, as he owned a quarter of all the outstanding shares of the many resultant companies, whose post-dissolution share value mostly doubled, he emerged from the dissolution even more wealthy; the richest man in America, and thus the world.^[4]

The off-shoot companies form the core of today's U.S. oil industry, including ExxonMobil (formerly Standard of New Jersey and Standard of New York), ConocoPhillips (the Conoco side, which was Standard's company in the Rocky Mountain states), Chevron (Standard of California), Amoco and Sohio (Standard of Indiana and Standard of Ohio, respectively, now BP of North America), Atlantic Richfield (the Atlantic side, now also a part of BP North America), Marathon (covering western Ohio and other parts of Ohio not covered by Sohio) and many other smaller companies.

Business strategy of Standard Oil

Standard Oil's market position had been established through an emphasis on efficiency and responsibility. While most companies dumped gasoline (this being before the automobile) in rivers, Standard used it to fuel the company's own machines. Where gigantic mountains of heavy waste grew by other companies' refineries, Rockefeller found ways to market and sell these waste products, creating the first synthetic competitor for beeswax, as well as acquiring the company that invented and produced Vaseline, the Chesebrough Manufacturing Company, which was a Standard company only from 1908 until 1911.

As the company grew larger through more effective business practices, it developed other strongly competitive strategies, including a systematic program of offering to purchase competitors. After purchasing them, Rockefeller shut down the ones he believed to be inefficient while keeping the others. In a seminal deal, in 1868, the Lake Shore Railroad, a part of the New York Central, gave Rockefeller's firm a \$0.25 cents/bbl. (71%) discount off of its listed rates in return for a promise to ship at least 60 carloads of oil daily and to handle the loading and unloading on its own, a huge competitive advantage.

Smaller companies decried the deals as being unfair because they were not producing enough oil to qualify for discounts. In 1872, Rockefeller joined the South Improvement Company which would have allowed him to receive rebates for shipping oil but also to receive drawbacks on oil his competitors shipped. When word got out of this arrangement, competitors convinced the Pennsylvania Legislature to revoke South Improvement's charter. No oil was ever shipped under this arrangement.

In one example of Standard's aggressive practices, a rival oil association decided to build an oil pipeline, hoping to overcome the virtual boycott imposed on Standard's competitors. In response, the railroad company (at Rockefeller's direction) denied the consortium permission to run the pipeline across railway land, forcing consortium staff to laboriously decant the oil into barrels, carry them over the railway crossing in carts, and then pump the oil manually back into the pipeline on the other side. When he learned of this tactic, Rockefeller then instructed the railway company to park empty

rail cars across the line, thereby preventing the carts from crossing his property.

Standard's actions and secret transport deals helped its kerosene to drop in price from 58 to 26 cents between 1865 and 1870. Competitors might not have appreciated the company's business practices, but consumers appreciated the drop in prices. Standard Oil, being formed well before the discovery of the Spindletop oil field and a demand for oil other than for heat and light, was well placed to control the growth of the oil business. The company was perceived to own and control all aspects of the trade. Oil could not leave the oil field unless Standard Oil agreed to move it: the "posted price" for oil was the price that Standard Oil agents printed on flyers that were nailed to posts in oil producing areas, and producers were in a take-it-or-leave-it position.

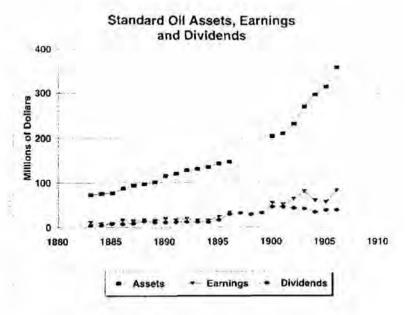
In 1890, Standard Oil of Ohio moved its headquarters out of Cleveland and into its permanent headquarters at 26 Broadway in New York City. Concurrently, the trustees of Standard Oil of Ohio chartered the Standard Oil Company of New Jersey in order to take advantages of New Jersey's more lenient corporate stock ownership laws. Standard Oil of New Jersey eventually became one of many important companies that dominated key markets, such as steel and the railroads.

Also in 1890, Congress passed the Sherman Antitrust Act — the source of all American anti-monopoly laws. The law forbade every contract, scheme, deal, or conspiracy to restrain trade, though the phrase "restraint of trade" remained subjective. The Standard Oil group quickly attracted attention from antitrust authorities leading to a lawsuit filed by then Ohio Attorney General David K. Watson.

Then came Ida M. Tarbell, an American author and journalist, and one of the original "muckrakers". Her father was an oil producer whose business had failed due to Rockefeller's business dealings. Following extensive interviews with a sympathetic senior executive of Standard Oil, Henry H. Rogers, Tarbell's investigations of Standard Oil fueled growing public attacks on Standard Oil and on monopolies in general. Her work was first published in nineteen parts in McClure's magazine, from November 1902 to October 1904, in which year it was published in book form as The History of the Standard Oil Company.

Standard paid out in dividends during 1882 to 1906 in the amount of \$548,436,000, at 65.4% payout ratio. A large part of the profits was not distributed to stockholders, but was put back into the business. The total net earnings from 1882-1906 amounted to \$838,783,800, exceeding the dividends by \$290,347,800. The latter amount was used for plant expansion.

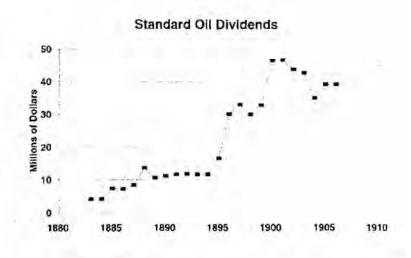
The Standard Oil Trust itself was controlled by a small group of families. Rockefeller himself stated in 1910: "I think it is true that the Pratt family, the Payne-Whitney family (which were one, as all the stock came from Colonel Payne), the Harkness-Flagler family (which came into the Company together) and the Rockefeller family controlled a majority of the stock during all the history of the Company up to the present time". [5]



These families reinvested most of the dividends in other industries, especially railroads. They also invested heavily in the gas and the electric lighting business (including the giant Consolidated Gas Company of New York City). They made large purchases of stock in U.S. Steel, Amalgamated Copper, and even Corn Products Refining Company. [6]

Monopoly charges, anti-trust litigation, and breakup of the Standard Oil group

By 1890, Standard Oil controlled 88% of the refined oil flows in the United States. In 1904 when the lawsuit began it controlled 91% of production and 85% of final sales. Most of its output was kerosene, of which 55% was exported around the world. In terms of cost efficiency, Standard's plants were about the same as competitors. After 1900 it did not try to force competitors out of business by underpricing them. ^[7] Beyond question, the federal Commissioner of Corporations concluded, the dominant position in the refining industry was due "to unfair practices-to abuse of the control of pipe-lines, to railroad discriminations, and to



unfair methods of competition." [8] Gradually, its market share fell to 64% by 1911. Standard did not try to monopolize the exploration and pumping of oil (its share in 1911 was 11%). John D. Rockefeller in 1897 had completely retired from the Standard Oil Company of New Jersey, though he continued to own a large fraction of its shares. Vice-president John D. Archbold then took a large part in the running of the firm.

In 1909, the U.S. Department of Justice filed suit in federal court alleging that Standard had engaged in the following methods to continue the monopoly and restrain interstate commerce: [9]

"Rebates, preferences, and other discriminatory practices in favor of the combination by railroad companies; restraint and monopolization by control of pipe lines, and unfair practices against competing pipe lines; contracts with competitors in restraint of trade; unfair methods of competition, such as local price cutting at the points where necessary to suppress competition; [and] espionage of the business of competitors, the operation of bogus independent companies, and payment of rebates on oil, with the like intent."

The lawsuit further argued that Standard's monopolistic practices took place in the last four years: [10]

"The general result of the investigation has been to disclose the existence of numerous and flagrant discriminations by the railroads in behalf of the Standard Oil Company and its affiliated corporations. With comparatively few exceptions, mainly of other large concerns in California, the Standard has been the sole beneficiary of such discriminations. In almost every section of the country that company has been found to enjoy some unfair advantages over its competitors, and some of these discriminations affect enormous areas."

The government identified four illegal patterns: 1) secret and semi-secret railroad rates; (2) discriminations in the open arrangement of rates; (3) discriminations in classification and rules of shipment; (4) discriminations in the treatment of private tank cars. The government alleged:[11]

"Almost everywhere the rates from the shipping points used exclusively, or almost exclusively, by the Standard are relatively lower than the rates from the shipping points of its competitors. Rates have been made low to let the Standard into markets, or they have been made high to keep its competitors out of markets. Trifling differences in distances are made an excuse for large differences in rates favorable to the Standard Oil Company, while large differences in distances are ignored where they are against the Standard. Sometimes connecting roads prorate on oil--that is, make through rates which are lower than the combination of local rates; sometimes they refuse to prorate; but in either case the result of their policy is to favor the Standard Oil Company. Different methods are used in different places and under different conditions, but the net result is that from Maine to California the general arrangement of open rates on petroleum oil is such as to give the Standard an unreasonable advantage over its competitors

The government said that Standard raised prices to its monopolistic customers, but lowered them to hurt competitors, often disguising its illegal actions by using bogus supposedly "independent" companies it controlled. [12]

"The evidence is, in fact, absolutely conclusive that the Standard Oil Company charges altogether excessive prices where it meets no competition, and particularly where there is little likelihood of competitors entering the field, and that, on the other hand, where competition is active, it frequently cuts prices to a point which leaves even the Standard little or no profit, and which more often leaves no profit to the competitor, whose costs are ordinarily somewhat higher."

On May 15, 1911, the United States Supreme Court ordered the breakup of the Standard Oil group of companies into thirty-four independent companies, each with its own board of directors. [13] The Court declared the group to be an "unreasonable" monopoly under the Sherman Antitrust Act.

Legacy

Whether the existence of Standard Oil was beneficial is a matter of some controversy.^[14] The notion that Standard was a monopoly is rejected by some economists, citing its much reduced market presence by the time of the antitrust trial. In 1890, Rep. William Mason, arguing in favor of the Sherman Antitrust Act, said: "trusts have made products cheaper, have reduced prices; but if the price of oil, for instance, were reduced to one cent a barrel, it would not right the wrong done to people of this country by the *trusts* which have destroyed legitimate competition and driven honest men from legitimate business enterprise".^[15]

The Sherman Act prohibits the restraint of trade. Defenders of Standard Oil insist that the company did not restrain trade, they were simply superior competitors. The federal courts ruled otherwise.

Many analysts agree that the breakup was beneficial to consumers in the long run, and no one has ever proposed that Standard Oil be reassembled in pre-1911 form. [16]

Successor companies

Successor companies to the Standard Oil Trust (post-1911) include:

- Standard Oil of New Jersey (SONJ) or Esso (S.O. or Eastern States, Standard Oil) renamed Exxon, now part of ExxonMobil. Standard Trust
 companies Carter Oil, Imperial Oil (Canada), and Standard of Louisiana were kept as part of Standard Oil of New Jersey after the breakup.
- Standard Oil of New York or Socony, merged with Vacuum renamed Mobil, now part of ExxonMobil.
- Standard Oil of California or Socal renamed Chevron, became ChevronTexaco, but returned to Chevron.
- Standard Oil of Indiana or Stanolind, renamed Amoco (American Oil Co.) now part of BP.
- Standard's Atlantic and the independent company Richfield merged to form Atlantic Richfield or Arco, now part of BP. Atlantic operations were spun off and bought by Sunoco.
- Standard Oil of Kentucky or Kyso was acquired by Standard Oil of California currently Chevron.
- Continental Oil Company or Conoco now part of ConocoPhillips.
- · Standard Oil of Ohio or Sohio now part of BP.
- The Ohio Oil Company more commonly referred to as "The Ohio", and marketed gasoline under the Marathon name. The company is now known as Marathon Oil Company, and was often a rival with the in-state Standard spinoff, Sohio.

See also Seven Sisters (oil companies)

Other Standard Oil spin-offs:

- Standard Oil of Iowa pre-1911 became Standard Oil of California.
- Standard Oil of Minnesota pre-1911 bought by Standard Oil of Indiana.
- Standard Oil of Illinois pre-1911 bought by Standard Oil of Indiana.
- · Standard Oil of Kansas refining only, eventually bought by Indiana Standard.
- Standard Oil of Missouri pre-1911 dissolved.
- Standard Oil of Louisiana always owned by Standard Oil of New Jersey (now Exxon).
- Standard Oil of Brazil always owned by Standard Oil of New Jersey (now Exxon).
- Standard Oil of Colorado a scam to cash in on the Standard Oil brand in the 1930s.
- Standard Oil of Connecticut A fuel oil marketer in Connecticut not related to the Rockefeller companies.

Other companies divested in the 1911 breakup:

- Anglo-American Oil Co. acquired by Jersey Standard in 1930, now Esso UK.
- · Buckeye Pipeline Co.
- Borne-Scrymser Co. (chemicals)
- · Chesebrough Manufacturing (Vasoline)
- · Colonial Oil.
- · Crescent Pipeline Co.
- · Cumberland Pipe Line Co.
- Eureka Pipe Line Co.

- Galena-Signal Oil Co.
- Indiana Pipe Line Co.
- National Transit Co.
- New York Transit Co.
- Northern Pipe Line Co.
- · Prairie Oil & Gas.
- · Solar Refining.
- · Southern Pipe Line Co.
- South Penn Oil Co. eventually became Pennzoil, now part of Shell.
- Southwest Pennsylvania Pipe Line Co.
- · Swan and Finch.
- Union Tank Lines.
- Washington Oil Co.
- Waters-Pierce.

Notes

- 1. ^ ** One of the world's first and biggest multinationals see Daniel Yergin, The Prize: The Epic Quest for Oil, Money, and Power. New York: Simon & Schuster, 1991, (p.35).
- 2. ^ Hidy, Ralph W. and Muriel E. Hidy. Pioneering in Big Business, 1882-1911: History of Standard Oil Company (New Jersey) (1955).
- 3. ^ Standard Oil of New Jersey seen as all-pervasive and unaccountable, holding stock in a myriad of other companies see Yergin, op. cit., (pp.96-98)
- 4. ^ Rockefeller the richest man after the dissolution of 1911 see Yergin, op. cit., (p.113)
- 5. ^ Standard Oil controlled by a small group of families see Ron Chernow, Titan: The Life of John D. Rockefeller, Sr., London: Warner Books, 1998, (p.291)
- 6. ^ Jones, Eliot. The Trust Problem in the United States pp. 89-90 (1922) (hereinafter Jones).
- 7. ^ Jones pp 58-59, 64.
- 8. ^ Jones. pp. 65-66.
- Manns, Leslie D., "Dominance in the Oil Industry: Standard Oil from 1865 to 1911" in David I. Rosenbaum ed., Market Dominance: How Firms Gain, Hold, or Lose it and the Impact on Economic Performance, p. 11 (Praeger 1998).
- 10. ^ Jones, p. 73.
- 11. ^ Jones, p 75-76.
- 12. ^ Jones, p. 80.
- 13. ^ See generally Standard Oil Co. of New Jersey v. United States, 221 U.S. 1 (1911).
- 14. ^ see [1] [2]
- 15. ^ Congressional Record, 51st Congress, 1st session, House, June 20, 1890, p. 4100.
- ^ David I. Rosenbaum, Market Dominance: How Firms Gain, Hold, or Lose it and the Impact on Economic Performance, New York: Praeger Publishers, 1998, (pp.31-33)

See also

- . John D. Rockefeller
- William Rockefeller

- · Rockefeller family
- Exxon Mobil
- John D. Archbold
- Henry H. Rogers
- · Charles Pratt
- Charles Pratt and Company
- Henry Flagler
- Ida M. Tarbell
- Anti-trust
- Monopoly
- · Wamsutta Oil Refinery
- Standard Oil Gasoline Station
- Standard Oil Co. of New Jersey v. United States
- History of the United States (1865-1918)

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External links

- The Dismantling of The Standard Oil Trust
- Educate Yourself- Standard Oil -- Part I
- · Witch-hunting for Robber Barons: The Standard Oil Story by Lawrence W. Reed Argues Standard Oil was not a coercive monopoly.
- Google Books: Dynastic America and Those Who Own It, 2003 {1921}, by Henry H. Klein
- David K. Watson
- Standard Oil Trust original Stock Certificate signed by John. D. Rockefeller, William Rockefeller, Henry M. Flagler and Jabez Abel Bostwick -1882
- Whatever happened to Standard Oil?: Pre-1911 and Post-1911 Timeline of the various subsidiaries
- Standard Oil around the World: Post-1911

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Categories: Standard Oil | Rockefeller family | History of the petroleum industry | Monopolies | Companies established in 1870 | Defunct American oil companies | 1911 disestablishments

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ExxonMobil

From Wikipedia, the free encyclopedia

Exxon Mobil Corporation or ExxonMobil (NYSE: XOM), headquartered in Irving, Texas, a suburb of Dallas, USA, is the largest publicly traded integrated oil and gas company in the world, formed on November 30, 1999, by the merger of Exxon and Mobil. As of 2007 it is the largest company in the world (in market value) as ranked by the Forbes Global 2000; at \$410.7 billion and the second largest company in the world (by revenue), after Wal-Mart Stores as ranked by the Fortune Global 500. It is the largest of the six oil "supermajors" with daily production of 6.5m boe (barrels of oil equivalent), contributing 3% of the world's oil and 2% of the world's energy.

As of 2007, Exxonmobil Corporation ranks as the seventh largest company in the world overall, according to the Forbes Global 2000.

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 - 6.3 Valdez oil spill disaster
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 - 8.4 ExxonMobil responses to issues
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Exxon Mobil Corporation

EXonMobil

Type Public (NYSE: XOM)

Founded 1999 (merger)

1911 (Standard Oil of New Jersey) 1911 (Standard Oil of New York)

1870 (Standard Oil)

Headquarters Irving, Texas, USA

Key people Rex W. Tillerson (Chairman/CEO)

Industry Oil and Gas

Products Fuels, Lubricants, Petrochemicals
Revenue ▲ \$377.635 Billion USD (2006)

Net income ▲ \$39.50 Billion USD (2006)

10.46% profit margin

Employees 106,100 Including Company Operated

Retail Sites ("CORS")[1]

Slogan "Taking on the world's toughest

energy challenges", "We're drivers

too", "Understanding Energy"

Website www.exxonmobil.com

Corporate divisions

Exxon Mobil Global Corporate Headquarters are located in Irving, a suburb of Dallas, Texas, whereby this company markets products around the world under the brands of Exxon, Mobil, and Esso; it also owns hundreds of smaller subsidiaries such as Imperial Oil Limited (66% ownership) (an oil retailer in Canada) and SeaRiver Maritime.

The company is bifurcated into a "Downstream" division (marketing, refining, and retail operations) located in Fairfax, Virginia, an "Upstream" division (oil exploration, extraction, shipping, and wholesale operations) located in Houston, Texas, and a "Chemicals" division also located in Houston, Texas. Although most internal operations are divided along these lines, the company also has several ancillary divisions, such as Coal & Minerals, which are standalone and not part of either the Upstream or the Downstream segments.

The upstream division dominates the company's cashflow, accounting for approximately 70% of revenue. The company employs over 100,000 people worldwide, with approximately 4,000 employees in its Fairfax downstream headquarters and 27,000 people in its Houston upstream headquarters.

The merger of Exxon and Mobil was unique in American history because it reunited the two largest companies of John D. Rockefeller's Standard Oil trust, Standard Oil Company of New Jersey/Exxon and Standard Oil Company of New York/Mobil, which had been forcibly separated by government order nearly a century earlier.

In 2005, ExxonMobil replaced Wal-Mart as the world's largest publicly held corporation when measured by revenue, although Wal-Mart remains the largest by number of employees.

In 2006, Wal-Mart recaptured the lead with revenues of \$348.7 billion against ExxonMobil's \$335.1. ExxonMobil continues to lead the world in both profits (\$39.5 billion in 2006), and market value (\$410.7 billion).

History

Both Exxon and Mobil were descendants of the John D. Rockefeller corporation, Standard Oil. The reputation of Standard Oil in the public eye suffered badly after publication of Ida M. Tarbell's classic exposé *The History of the Standard Oil Company* in 1904, leading to a growing outcry for the government to take action against the company.

By 1911, with public outcry at a climax, the Supreme Court of the United States ruled that Standard Oil must be dissolved and split into 34 companies. Two of these companies were Jersey Standard ("Standard Oil Company of New Jersey"), which eventually became Exxon, and Socony ("Standard Oil Company of New York"), which eventually became Mobil.

In the same year, the nation's kerosene output was eclipsed for the first time by gasoline. The growing automotive market inspired the product trademark Mobiloil, registered by Socony in 1920.

Over the next few decades, both companies grew significantly. Jersey Standard, led by Walter C. Teagle, became the largest oil producer in the world. It acquired a 50 percent share in Humble Oil & Refining Co., a Texas oil producer. Socony purchased a 45 percent interest in Magnolia Petroleum Co., a major refiner, marketer and pipeline transporter. In 1931, Socony merged with Vacuum Oil Co., an industry pioneer dating back to 1866 and a growing Standard Oil spin-off in its own right.

In the Asia-Pacific region, Jersey Standard had oil production and refineries in Indonesia but no marketing network. Socony-Vacuum had Asian marketing outlets supplied remotely from California. In 1933, Jersey Standard and Socony-Vacuum merged their interests in the region into a 50-50 joint venture. Standard-Vacuum Oil Co., or "Stanvac," operated in 50 countries, from East Africa to New Zealand, before it was dissolved in 1962.

Mobil Chemical Company was established in 1960. As of 1999 its principal products included basic olefins and aromatics, ethylene glycol and polyethylene. The company produced synthetic lubricant base stocks as well as lubricant additives, propylene packaging films and catalysts. Exxon Chemical Company (first named Enjay Chemicals) became a worldwide organization in 1965 and in 1999 was a major producer and marketer of olefins, aromatics, polyethylene and polypropylene along with specialty lines such as elastomers, plasticizers, solvents, process fluids, oxo alcohols and adhesive resins. The company was an industry leader in metallocene catalyst technology to make unique polymers with improved performance.

In 1955, Socony-Vacuum became Socony Mobil Oil Co. and in 1966 simply Mobil Oil Corp. A decade later, the newly incorporated Mobil Corporation absorbed Mobil Oil as a wholly owned subsidiary. Jersey Standard changed its name to Exxon Corporation in 1972 and established Exxon as a trademark throughout the United States. In other parts of the world, Exxon and its affiliated companies continued to use its Esso trademark.

On March 24, 1989, shortly after midnight, the Exxon Valdez oil tanker struck Bligh Reef in Prince William Sound, Alaska, spilling more than 11 million gallons (42,000 m³) of crude oil. The spill was the second largest in U.S. history, and in the aftermath of the Exxon Valdez incident, the U.S. Congress passed the Oil Pollution Act of 1990. Immediately after the spill, Exxon voluntarily paid \$300 million to over 11,000 Alaskans and businesses affected by the Valdez spill. In addition, the company paid \$2.2 billion to clean up Prince William Sound, a process that lasted until 1992, when the State of Alaska and the U.S. Coast Guard declared the clean-up complete. Exxon paid \$1 billion in settlements with the state and federal governments. Virtually all Valdez compensatory damages were paid in full within one year of the accident, and the trial court commended Exxon for coming forward "with its people and its pocketbook and doing what had to be done under difficult circumstances." However, a \$4.5 billion punitive ruling against Exxon is still under appeal. The punitive damages were set by a federal court judge in Anchorage, and have twice been vacated by the Ninth Circuit Court of Appeals as excessive.

In 1998, Exxon and Mobil signed a US\$73.7 billion definitive agreement to merge and form a new company called Exxon Mobil Corporation, the largest company on the planet. After shareholder and regulatory approvals, the merger was completed on November 30, 1999.

In 2000, ExxonMobil sold a refinery in Benicia, California and 340 Exxon-branded stations to Valero Energy Corporation, as part of an FTC-mandated divestiture of California assets. ExxonMobil continues to supply petroleum products to over 700 Mobil-branded retail outlets in California.

In 2005, ExxonMobil's stock price surged in parallel with rising oil prices, surpassing General Electric as the largest corporation in the world in terms of market capitalization. At the end of 2005, it reported record profits of US \$36 billion in annual income, up 42% from the previous year (the overall annual income was an all-time record for annual income by any business, and included \$10 billion in the third quarter alone, also an all-time record

income for a single quarter by any business). The company and the American Petroleum Institute, the Oil and Chemical industry's lobbying apparatus, tried to downplay its success in order to avoid consumer criticism by putting up page-long ads in major American newspapers, such as *The New York Times*, *The Washington Post*, comparing oil industry profits to those of other large industries such as pharmaceuticals and banking. [11] [12] As an illustration, ExxonMobil's \$36 billion in profits came on top of \$370.6 billion in revenue, with a profit margin of 9.7%. In other words, Exxon netted 9.7 cents on each dollar of revenue it brought in. By contrast, Microsoft earned 30.8 cents for each dollar of revenue, and Google earned 23.9 cents for each dollar of revenue.

Exxon's long-time mascot is a tiger; Mobil's mascot is a red pegasus which dates back to the late 19th century and is one of the oldest marketing symbols still in use.

Corporate governance

The current Chairman of the Board and CEO of Exxon Mobil Corporation is Rex Tillerson. Tillerson assumed the top position on January 1, 2006, on the retirement of long-time chairman and CEO, Lee Raymond, who received a highly controversial retirement and severance package of approximately \$400 Million.

Board of directors

Current Exxon Mobil board members are (January 29, 2007):[13]

- Michael Boskin, professor of economics, Stanford University
- William W. George, professor of management practice, Harvard Business School
- James R. Houghton, Chairman of the Board, Corning Incorporated
- · William R. Howell, Chairman Emeritus, J.C. Penney Company
- Reatha Clark King, former chairman, Board of Trustees, General Mills Foundation
- Philip E. Lippincott, retired Chairman of the Board, Scott Paper Company and Campbell Soup Company
- · Henry A. McKinnell, Jr., Chairman of the Board and CEO, Pfizer
- Marilyn Carlson Nelson, Chairman and CEO, Carlson Companies
- Samuel J. Palmisano, Chairman of the Board, President and CEO, IBM Corporation
- · Walter V. Shipley, retired Chairman of the Board, Chase Manhattan Corporation
- J. Stephen Simon, Senior Vice President, Exxon Mobil Corporation
- Rex W. Tillerson, Chairman of the Board and Chief Executive Officer, Exxon Mobil Corporation

Organization

ExxonMobil is organized functionally into a number of global operating divisions. These divisions are grouped into three categories for reference purposes:

- Upstream
- Downstream
- · Chemical

Operating divisions by category are as follows:

- Upstream
 - ExxonMobil Exploration Company
 - ExxonMobil Development Company
 - ExxonMobil Production Company
 - ExxonMobil Gas and Power Marketing Company
 - · ExxonMobil Upstream Research Company
- Downstream
 - · ExxonMobil Refining and Supply Company
 - ExxonMobil Fuels Marketing Company
 - ExxonMobil Lubricants & Specialties Company
 - · ExxonMobil Research and Engineering Company
 - ExxonMobil Global Services Company
- · Chemical
 - ExxonMobil Chemical Company

Upstream and Chemical operations are headquartered in Houston, Texas, and the downstream operations are headquartered at the heritage-Mobil headquarters in Fairfax, Virginia.

Largest shareholders

As of June 30, 2006:

Owner	Percent
Barclays Global Investors	4.0
State Street Global Advisors	3.1
Vanguard Group	2.6
Fidelity Management and Research	1.5
Northern Trust Company	1.4
AllianceBernstein	1.4

JPMorgan Chase	1.3
Wellington Management Company	1.1
Capital Research & Management Company	1.0
Merrill Lynch Investment Management	0.9
Bank of America	0.8
TIAA-CREF Investment Management	0.7
Mellon Financial	0.6
Goldman Sachs	0.6
State Farm Insurance	0.6

Controversies

Funding of global warming skeptics

ExxonMobil has drawn criticism as a major funder of organizations campaigning against the scientific opinion that global warming is caused by the burning of fossil fuels. British newspaper *The Guardian* has reported that ExxonMobil has funded, among other groups skeptical of global warming, the Competitive Enterprise Institute, George C. Marshall Institute, Heartland Institute, Congress on Racial Equality, TechCentralStation.com, and International Policy Network. [2][3] The Union of Concerned Scientists released a report in 2007 finding that "ExxonMobil has funneled nearly \$16 million between 1998 and 2005 to a network of 43 advocacy organizations that seek to confuse the public on global warming science." [4] The report argued that ExxonMobil uses disinformation tactics similar to those used by the tobacco industry in its denials of the link between lung cancer and smoking, saying that the company uses "many of the same organizations and personnel to cloud the scientific understanding of climate change and delay action on the issue." [4] These charges are consistent with a 1998 internal ExxonMobil strategy memo stating "Victory will be achieved when uncertainties in climate science become part of the conventional wisdom" for "average citizens" and "the media." [5] ExxonMobil's support for these organizations has also drawn condemnation by the Royal Society, the academy of sciences of the United Kingdom. [6]

In August 2006, the Wall Street Journal [14][15] revealed that a YouTube video lampooning Al Gore, titled Al Gore's Penguin Army, appeared to be astroturfing by DCI Group, a Washington PR firm with ties to ExxonMobil as well as the Republican Party.

In January 2007 the company appeared to change its position, when vice president for public affairs Kenneth Cohen said "we know enough now — or, society knows enough now — that the risk is serious and action should be taken." Cohen stated that as of 2006, ExxonMobil had ceased funding of the Competitive Enterprise Institute and "five or six' similar groups". [16]

On February 13 2007 ExxonMobil Chief Rex W. Tillerson acknowledged that the planet was warming while carbon dioxide levels were increasing, but in the same speech gave an unalloyed defense of the oil industry and predicted that hydrocarbons would dominate the world's transportation as energy demand grows by an expected 40 percent by 2030. Tillerson stated that there is no significant alternative to oil in coming decades, and that ExxonMobil would continue to make oil and natural gas its primary products. [7] "I'm no expert on biofuels. I don't know much about farming and I

don't know much about moonshine," he said. "There is really nothing [ExxonMobil] can bring to that whole [biofuels] issue. We don't see a direct role for ourselves with today's technology," he said. [8]

Foreign business practices

Investigative reporting by Forbes Magazine raised questions about ExxonMobil's dealings with the leaders of oil-rich nations." ExxonMobil controls concessions covering 11 million acres (44,500 km²) off the coast of Angola that hold an estimated 7.5 billion barrels (1.2 km³) of crude. [9] Forbes alleged that "ExxonMobil handed hundreds of millions of dollars to the corrupt regime of President José Eduardo dos Santos in the late 1990s. [10][11] [12][13] [14]

In 2003, the Office of Foreign Assets Control reported that ExxonMobil engaged in illegal trade with Sudan and it, along with dozens of other companies, settled with the United States government for \$50,000.^[15]

In March 2003, James Giffen of the Mercator Corporation was indicted, accused of bribing President Nursultan Nazarbayev of Kazakhstan with \$78 million to help ExxonMobil win a 25 percent share of the Tengiz oilfield, the third largest in the world. On April 2, 2003, former-Mobil executive J. Bryan Williams was indicted on tax charges relating to this same transaction. The case is the largest under the Foreign Corrupt Practices Act. [16] This series of events is depicted in the film Syriana.

In a U.S. Department of Justice release dated September 18, 2003, the United States Attorney for the Southern District of New York announced that J. Bryan Williams, a former senior executive of Mobil Oil Corporation, had been sentenced to three years and ten months in prison on charges of evading income taxes on more than \$7 million in unreported income, "including a \$2 million kickback he received in connection with Mobil's oil business in Kazakhstan." According to documents filed with the court, Williams' unreported income included millions of dollars in kickbacks from governments, persons, and other entities with whom Williams conducted business while employed by Mobil. In addition to his sentence, Williams must pay a fine of \$25,000 and more than \$3.5 million in restitution to the IRS, in addition to penalties and interest.[[17]]

Valdez oil spill disaster

The March 24, 1989 Exxon Valdez oil spill was one of the most devastating man made environmental disasters ever to occur at sea. Exxon later removed the name "Exxon" from its tanker shipping subsidiary, which it renamed "SeaRiver Maritime." The renamed subsidiary, though wholly Exxon-controlled, has a separate corporate charter and board of directors, and the former Exxon Valdez is now the SeaRiver Mediterranean. The renamed tanker is legally owned by a small, allegedly under capitalized, stand-alone company, which would have minimal ability to pay out on claims in the event of a further accident. [17]

In 2006 U.S. Congressman Dave Reichert (WA-08) demanded ExxonMobil begin paying punitive damages it owes to 33,000 fishermen, businesses and affected communities waiting compensation agreed to by ExxonMobil as part of a 12-year old court case settling the damages. [18]

The U.S. Supreme Court let stand a \$5 billion punitive damage verdict against ExxonMobil for its 1989 Exxon Valdez oil spill, rejecting without comment an appeal by the company on grounds of jury irregularities.^[19]

Human rights record

ExxonMobil is the target of human rights activists for actions taken by the corporation in the Indonesian territory of Aceh. In June 2001 a lawsuit against ExxonMobil was filed in the Federal District Court of the District of Columbia under the Alien Tort Claims Act. The suit alleges that the ExxonMobil knowingly assisted human rights violations, including torture, murder and rape, by employing and providing material support to Indonesian military forces, who committed the alleged offenses during civil unrest in Aceh. Human rights complaints involving ExxonMobil's relationship with the Indonesian military first arose in 1992; the company denies these accusations and has filed a motion to dismiss the suit, which as of 2006 is still pending. [20]

Financial Data

Financial Data USD millions[21]

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Year-end	2002	2003	2004	2005
Sales	204 506	237 054	291 252	358 955
EBITDA	26 038	41 220	51 646	70 181
Net income	11 460	21 510	25 330	36 130
Total Debt	10 748	9 545	8 293	7 991

See also

· Exxon Valdez oil spill

External links

General information

- ExxonMobil corporate website
 - Exxon USA website
 - Mobil global website
 - Esso global website
- · History of Standard Oil spinoffs and their brands
- ExxonMobil's most recent conference call transcripts

Funding given by ExxonMobil

- ExxonMobil's list of funded organizations, 2005
- ExxonMobil's list of political contributions

Websites critical of ExxonMobil

- · Bob Is the Oil Guy
- · Exxonmobil entry at Knowmore.org
- · Greenpeace UK's page on Esso
- ExxposeExxon by Defenders of Wildlife
- Stop Esso (dead link 10/28/06)
- · Exxonsecrets.org by Greenpeace
 - · List of organizations funded by Exxon Mobil
- · As the World Burns, a Mother Jones special report on Exxon and global warming
- http://www.worldoutofbalance.org New documentary released which exposes ExxonMobil's impact on Climate Change
- http://www.consumersforpeace.org Consumers for Peace initiated the ExxonMobil War Boycott

ExxonMobil responses to issues

- ExxonMobil Web Page on Business Ethics & Standards
- · ExxonMobil Web Page on Climate Change
- ExxonMobil Web Page on Valdez Oil Spill

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- 8. ^ Exxon Mobil CEO: climate policy would be prudent
- 9. ^ ExxonMobil. Press release.[4]
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- 11. ^ In May 2002, human rights advocates began calling for an investigation of the role of US oil companies and the Bush administration in Angola's "Arms for Oil" scandal. According to a report by the British-based non-governmental organization Global Witness, Bush and US oil interests had ties to some of the key figures in the arms-for-oil scandal. Global Witness alleged that in exchange for profitable off-shore oil concessions, ExxonMobil and other American and western European oil companies funded Angolan president Jose Eduardo dos Santos. After transferring an alleged \$770 million in oil revenues to their own private bank accounts, dos Santos and his administration began a violent offensive against rebel groups in the country in which many human rights abuses were

inflicted on the Angolan people. from Co-op America

- 12. ^ Violation of the Bribes & Foreign Corrupt Practices Aact (ExxonMobil controls concessions covering 11 million acres (44,500 km²) off the coast of <Angola that hold an estimated 7.5 billion barrels (1.2 km³) of crude, from Search.com
- 13. ^ Even though Angola is the most effective of Africa's oil producers at retaining a high percentage of its oil wealth, its people get the least benefit from it. Much of that wealth has been mortgaged to pay for a long and destructive civil war. The lack of transparency of Angola's Government and its oil corporation, Sonangol, with the complicity of big oil companies, causes the rest to disappear without leaving much trace among Angola's poor, from Africa Files

14. ^ How Angolan State corruption and the lack of oil company and banking transparency has contributed to Angola's humanitarian and development catastrophe. from Africa Action

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Dow Jones Industrial Average

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3M · Alcoa · Altria Group · American Express · American International Group · AT&T · Boeing · Caterpillar · Citigroup · The Coca-Cola Company · DuPont · ExxonMobil · General Electric · General Motors · Hewlett-Packard · Home Depot · Honeywell · Intel · IBM · Johnson & Johnson · JPMorgan Chase · McDonald's · Merck & Co. · Microsoft · Pfizer · Procter & Gamble · United Technologies · Verizon · Wal-Mart · The Walt Disney Company

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United Kingdom t: +44 (0)1865 791 391 e: mail@corporatewatch.org In 2000, 82% of the revenues came from refining and marketing; 10% from exploration and production; 8% from Chemicals, 8% and other revenues were nominal [1].

UK

Exploration and production is the largest business area of Esso in the UK. However, most of it is done as joint ventures with Shell, with Shell as the operator, so Esso isn't very visible. Compared to Exxon globally, the downstream and chemical part of their operations are smaller, 5% of total. Esso UK is the market leader in retailing and has the biggest refinery in the UK.

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Market share/importance

Worldwide

Exxon is the biggest not state owned oil and gas company in the world. According to the Time & Fortune Group's 2001 Fortune Global 500 list of the largest companies by revenue, it is the biggest corporation [2]. Worldwide it employs over 100,000 people.

Petroleum is mostly sold through Exxon's/Esso's service stations of which they have 45,000 in 118 countries. Aviation fuel is sold at more than 700 airports in 80 countries. ExxonMobil Marine Fuels serves more than 300 ports in 70 countries [3].

UK

Esso is the biggest petrol retailer in the UK with 1620 stations, of which 878 are company owned. Around 70% of the population live within a mere two miles of an Esso petrol station. According to Esso, their Snack 'n' Shop chain (part of their petrol stations) is the largest chain of shops in the oil industry.

Esso produce 10% of UK oil and gas, while over 15% of all oil products used in Britain come from their refinery in Fawley. As for gas, Esso supplies almost 9% of the total gas used by UK consumers.

Esso employs about 2800 people. Added to that amount is the significant number employed by subsidiary companies and contractors working on Esso sites and projects.

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History

Worldwide

[This is brief summary and does not go into the history of the different ExxonMobil companies]

The history of Exxon and Mobile is that of a true corporate giant. It started when John D. Rockefeller and partners formed the Standard Oil Company (1870). By 1878 Standard Oil controlled 95% of the US refining capacity [4]. This had largely been achieved by swallowing all competitors, and getting secret rebates from oil and making 'drawback' agreements with the railroad [5]. In 1989, Standard Oil officials were indicted for violating state anti monopoly laws. Standard Oil was not convicted, but this marked the beginning of several attempts to curb its power.

In 1882 the Standard Oil Trust was formed. It was the first trust ever formed and was constructed to circumvent Ohio laws restricting ownership of out of state companies. In 1890 the Sherman Antitrust Act was passed largely in response to Standard Oil's monopoly. The U.S. Supreme Court finally broke up the Standard Oil trust in 1911 into 34 different companies. The ownership group however, stayed largely the same. Two of the spin-off companies were Jersey Standard and Socony, the chief predecessor companies of Exxon and Mobil respectively. Over the years the two companies spread their interests to all over the world [6].

During the 1930s when Walter C. Teagle was head of Standard Oil, the company forged close ties with I.G. Farben, a firm that supported the Nazis and used concentration camp labour. Charles Higham (a former New York Times writer and biographer) writes in his book Trading With the Enemy: 'From the 1920s on Teagle showed a marked admiration for Germany's enterprise in overcoming the destructive terms of the Versaille Treaty. His lumbering stride, booming tones, and clouds of cigar smoke became widely and affectionately known in the circles that helped support the rising Nazi Party' [7]. Exxon Mobil's website prefers to describe how 'Each company [Jersey Standard and Socony-Vacuum] beefed up refining output to supply the Allied war effort [8].'

In 1931 Socony purchased assets of Vacuum Oil and changed its name to Socony-Vacuum. Socony-Vacuum became Socony Mobil Oil Co. in 1955 and, in 1966, simply Mobil Oil Corp.

Jersey Standard changed its name to Exxon Corporation in 1972 and established Exxon as a trademark throughout the United States. In other parts of the world its affiliated companies continued to use the Esso trademark.

In the 1970s, Exxon, Mobil and other companies escalated exploration and development outside the Middle East - in the North Sea, the Gulf of Mexico, Africa and Asia [9].

The biggest public scandal to hit Exxon so far came with the Exxon Valdez oil spill in 1989 (see Case Study and Corporate Crimes below).

In 1998, Exxon and Mobil signed a definitive agreement to merge and form a new company called Exxon Mobil Corporation. 'This merger will enhance our ability to be an effective global competitor in a volatile world economy and in an industry that is more and more competitive,' was the comment of Lee Raymond and Lou Noto, chairmen and chief executive officers of Exxon and Mobil respectively. After shareholder and regulatory approvals, the merger was completed in November 1999 [10].

UK

Esso started as the Anglo-American Oil Company in 1888, producing oil for kerosene lamps. It was only in 1951 that they became known as Esso. Following the merger of Exxon and Mobil in December 1999, it is now a part of the Exxon Mobil Corporation.

Esso has now finalised an alliance with Tesco (See Corporate Watch profile of Tesco Plc). Although Tesco claims that it no longer sourcs its petrol from Esso in its own brand petrol stations, their alliance sees Tesco Express forecourt shops on the grounds of Esso petrol stations.

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 PUBLIC DOCUMENT COUNT:
                                      16
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                                               5959 LAS COLINAS BLVD
                   STREET 1:
                   CITY:
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                   STATE:
                                               TX
                                               75039-2298
                   ZIP
                   BUSINESS PHONE:
                                               9724441000
         MAIL ADDRESS:
                                               5959 LAS COLINAS BLVD
                   STREET 1:
                   CITY:
                                               IRVING
                   STATE:
                                               TX
                                               75039-2298
         FORMER COMPANY:
FORMER CONFORMED NAME: EXXON CORP
                   DATE OF NAME CHANGE:
                                               19920703
          FORMER COMPANY:
                   FORMER CONFORMED NAME:
                                               STANDARD OIL CO OF NEW JERSEY
                   DATE OF NAME CHANGE:
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                                           1999
                         SECURITIES AND EXCHANGE COMMISSION
                                WASHINGTON, D.C. 20549
    FORM 10-K
[ X ] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF
                     THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 1999
     OR
                        THE SECURITIES EXCHANGE ACT OF 1934
                 For the transition period from
                             Commission File Number 1-2256
                                EXXON MOBIL CORPORATION
             (Exact name of registrant as specified in its charter)
                                                             13-5409005
               NEW JERSEY
     (State or other jurisdiction of
                                                  (I.R.S. Employer Identification
    incorporation or organization)
               5959 LAS COLINAS BOULEVARD, IRVING, TEXAS 75039-2298
                (Address of principal executive offices) (Zip Code)
(972) 444-1000
               (Registrant's telephone number, including area code)
           Securities registered pursuant to Section 12(b) of the Act:
<TABLE>
<CAPTION>
                                                                 Name of Each Exchange
                   Title of Each Class
                                                                   on Which Registered
                                                                «C»
Common Stock, without par value (3,479,892,054 shares
outstanding at February 29, 2000)
Registered securities guaranteed by Registrant:
                                                                New York Stock Exchange
SeaRiver Maritime Financial Holdings, Inc.
Twenty-Five Year Debt Securities due October 1, 2011 New York Stock Exchange
```

BBF000067

Exxon Capital Corporation

Twelve Year 6% Notes due July 1, 2005

New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

The aggregate market value of the voting stock held by non-affiliates of the registrant on February 29, 2000, based on the closing price on that date of $$75\ 5/16$ on the New York Stock Exchange composite tape, was in excess of \$262billion.

Documents Incorporated by Reference:
1999 Annual Report to Shareholders (Parts I, II and IV)
Proxy Statement for the 2000 Annual Meeting of Shareholders (Part III)

*PAGE>

EXXON MOBIL CORPORATION FORM 10-K FOR THE FISCAL YEAR ENDED DECEMBER 31, 1999

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PART I

Exxon Mobil Corporation ("ExxonMobil"), formerly named Exxon Corporation, was incorporated in the State of New Jersey in 1882.

On December 1, 1998, Exxon Corporation ("Exxon") and Mobil Corporation ('Mobil") signed an agreement to merge the two companies subject to shareholder approval, regulatory reviews and other conditions. On November 30, 1999, pursuant to the agreement, a wholly-owned subsidiary of Exxon was merged with and into Mobil so that Mobil became a wholly-owned subsidiary of Exxon. At the same time, Exxon changed its name to Exxon Mobil Corporation. Under the terms of the agreement, approximately 1.0 billion shares of ExxonMobil common stock were issued in exchange for all the outstanding shares of Mobil common stock based on an exchange ratio of 1.32015 ExxonMobil shares for each Mobil share. Each outstanding share of Mobil preferred stock was converted into one share of a new class of ExxonMobil preferred stock, following the exchange, former shareholders of Exxon owned approximately 70 percent of the combined company and former Mobil shareholders owned approximately 30 percent.

Coincident with the merger, ExxonMobil announced a new organization concidence with the merger, excomposit announced a new organization structure built on a concept of eleven separate global businesses designed to allow the company to compete more effectively in a changing worldwide energy industry: five global upstream businesses—Exploration, Development Production, Gas Marketing and Upstream Research, four downstream businesses-Refining and Supply, Fuels Marketing, Lubricants and Petroleum Specialties, and Technology, plus a Chemical company and a Coal and Minerals company.

Divisions and affiliated companies of ExxonMobil operate or market products in the United States and about 200 other countries. Their principal business is energy, involving exploration for, and production of, crude oil and natural gas, manufacturing of petroleum products and transportation and sale of crude oil, natural gas and petroleum products. ExxonMobil is a major manufacturer and marketer of basic petrochemicals, including olefins, aromatics, polyethylene and polypropylene plastics and a wide variety of specialty products. ExxonMobil is engaged in exploration for, and mining and sale of coal, copper and other minerals. ExxonMobil also has interests in electric power generation facilities. Affiliates of ExxonMobil conduct extensive research programs in support of these businesses.

EXXON Mobil Corporation has several divisions and hundreds of affiliates, many with names that include ExxonMobil, Exxon, Esso or Mobil. For convenience and simplicity, in this report the terms ExxonMobil, Exxon, Esso and Mobil, as well as the terms corporation, company, our, we and its, are sometimes used as abbreviated references to specific affiliates or groups of affiliates. The precise meaning depends on the context in question.

In 1999, the corporation spent \$2,052 million (of which \$650 million were capital expenditures) on environmental conservation projects and expenses worldwide, mostly dealing with air and water conservation. Total expenditures for such activities are expected to be about \$7.0 billion in both 2000 and 2001 (with capital expenditures representing about 25 percent of the total).

Operating data and industry segment information for the corporation are contained on pages F31, F32, F38 and F39; information on oil and gas reserves is contained on pages F35 and F36 and information on company-sponsored research and development activities is contained on page F20 of the accompanying financial section of the 1999 Annual Report to shareholders.*

*Only the data appearing on pages F2 and F6 through F39 of the accompanying financial section of the 1999 Annual Report to shareholders, incorporated in this report as Exhibit 13, are deemed to be filed as part of this Annual Report on Form 10-K as indicated under Items 1, 2, 3, 5, 6, 7, 7A, 8 and 14 and on page 21.

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Factors Affecting Future Results

Competitive Factors: The energy and petrochemical industries are highly competitive. There is competition within the industries and also with other industries in supplying the energy, fuel and chemical needs of industry and individual consumers. The corporation competes with other firms in the sale or purchase of various goods or services in many national and international markets and employs all methods of competition which are lawful and appropriate for such purposes.

Political Factors; The operations and earnings of the corporation and its affiliates throughout the world have been, and may in the future be, affected from time to time in varying degree by political instability and by other political developments and laws and regulations, such as forced divestiture of assets; restrictions on production, imports and exports; price controls; tax increases and retroactive tax claims; expropriation of property; cancellation of contract rights and environmental regulations. Both the likelihood of such occurrences and their overall effect upon the corporation vary greatly from country to country and are not predictable.

industry and Economic Factors: The operations and earnings of the corporation and its affiliates throughout the world are also affected by local, regional and global events or conditions that affect supply and demand for oil natural gas, petroleum products, petrochemicals and other ExxonMobil products. These events or conditions are generally not predictable and include, among other things, the development of new supply sources; supply disruptions, weather; international political events, technological advances, changes in demographics and consumer preferences and the competitiveness of alternative energy sources or product substitutes.

Project Factors: The advancement, cost and results of particular ExxonMobil projects also depend on the outcome of negotiations with partners, governments, suppliers, customers or others; changes in operating conditions or costs and the occurrence of unforeseen technical difficulties.

Merger-Related Factors: Realization of the benefits of the merger will depend, among other things, upon management's ability to integrate the businesses of Exxon and Mobil successfully and on schedule. Puture results could also be affected by the diversion of management's focus and resources from other strategic opportunities during the merger integration process.

Market Risk Factors: See also page F9 and F10 of the accompanying financial section of the 1999 Annual Report to shareholders for discussion of the impact of market risks, inflation and other uncertainties.

Projections, estimates and descriptions of ExxonMobil's plans and objectives included or incorporated in Items 1, 2, 7 and 7A of this report are forward-looking statements. Actual project completion dates, production rates, capital expenditures, costs and business plans could differ materially due to, among other things, the factors discussed above and elsewhere in this report.

Item 2. Properties

Part of the information in response to this item and to the Securities Exchange Act Industry Guide 2 is contained in the accompanying financial section of the 1999 Annual Report to shareholders in Note 11, which note appears on page F22, and on pages F33 through F37 and F39.

Information with regard to oil and gas producing activities follows:

 Net Reserves of Crude Oil and Natural Gas Liquids (millions of barrels) and Natural Gas (billions of cubic feet) at Year-End 1999 Estimated proved reserves are shown on pages F35 and F36 of the accompanying financial section of the 1999 Annual Report to shareholders. No major discovery or other favorable or adverse event

2

<PAGE>

has occurred since December 31, 1999, that would cause a significant change in the estimated proved reserves as of that date. For information on the standardized measure of discounted future net cash flows relating to proved oil and gas reserves, see page F37 of the accompanying financial section of the 1999 Annual Report to shareholders.

Estimates of Total Net Proved Dil and Gas Reserves Filed with Other Federal Agencies

During 1999. Exxon and Mobil filed proved reserves estimates with the U.S. Department of Energy on Forms EIA-23 and EIA-28. The information is consistent with the Exxon and Mobil 1998 Annual Reports to shareholders with the exception of EIA-23 which covered total oil and gas reserves from Exxon- and Mobil-operated properties in the United States and does not include gas plant liquids. The differences between the oil reserves and gas reserves reported on EIA-23 and those reported in the 1998 Annual Reports exceed five percent.

1. Average Sales Prices and Production Costs per Unit of Production

Incorporated by reference to page F31 of the accompanying financial section of the 1999 Annual Report to shareholders. Average sales prices have been calculated by using sales quantities from our own production as the divisor. Average production costs have been computed by using net production quantities for the divisor. The volumes of crude oil and natural gas liquids (NGL) production used for this computation are shown in the reserves table on page F35 of the accompanying financial section of the 1999 Annual Report to shareholders. The net production volumes of natural gas available for sale by the producing function used in this calculation are shown on page F39 of the accompanying financial section of the 1999 Annual Report to shareholders. The volumes of natural gas were converted to oil-equivalent barrels based on a conversion factor of six thousand cubic feet per barrel.

4. Gross and Net Productive Wells <TABLE> <CAPTION>

Asia-Pacific			Year-En	d 1999	
Gross Net Gross Net Net		1446-44			
<pre> <s></s></pre>		0	il	Gas	S
<pre> <s></s></pre>			*****	*****	
United States		Gross	Net	Gross	Net
United States		*****	*****	Leave.	****
Canada 7,320 5,164 4,763 2,386 Europe 1,859 621 1,362 508 Asia-Pacific 1,440 541 684 261 Other 1,216 254 117 34	<s></s>	<c></c>	<c></c>	×C>	«C»
Europe	United States	37,880	13,708	10.047	4,624
Asia-Pacific	Canada	7,320	5,164	4,763	2,388
Other	Europe	1,859	621	1,362	505
Section 11000 51000	Asia-Pacific	1,440	541	684	261
	Other	1,216	254	117	36
Total			200000		54250
CORRECT MARKET PURSON AND OF	Total	49,715	20,288	16,973	7,814
		cennar	*****	***	****

</TABLE>

S. Gross and Net Developed Acreage <TABLE> <CAPTION>

	Year-End 1999		
	*********	********	
	Gross	Net	

	(Thousands	of acres)	
<s></s>	<c></c>	<c></c>	
United States	9,168	5,894	
Canada	4,619	2,429	
Europe	13,364	5,190	
Asia-Pacific.	3,823	1,487	
Other	10,161	2,198	
Total	41,135	17,198	
	necessaries.	winder.	
Vanc by to			

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Note: Separate acreage data for oil and gas are not maintained because, in many instances, both are produced from the same acreage.

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6. Gross and Net Undeveloped Acreage <TABLE> <CAPTION>

CONFILORS	Vane D	nd 1999
	16ar -Pi	ng 1999
	Gross	Net

	(Thousands	of acres)
<8>	«C»	«C>
United States	11,895	7,780
Canada	22,308	11,401
Burope	23,903	8,268
Asia-Pacific	61,829	33,955
Other	125, 283	61,147

Total	245,218	122,551
	-	*******
/TABLE>		

7. Summary of Acreage Terms in Key Areas

UNITED STATES

Dil and gas exploration leases are acquired for varying periods of time, ranging from one to ten years. Producing leases normally remain in effect until production ceases. In some instances, a "fee interest" is acquired where both the surface and the underlying mineral interests are owned outright.

CANADA

Exploration permits are granted for varying periods of time with renewals possible. Production leases are held as long as there is production on the lease. The majority of Cold Lake leases were taken for an initial 21-year term in 1968-1969 and renewed for a second 21-year term in 1989-1990. The exploration acreage in Bastern Canada is currently held by work commitments of various amounts.

EUROPE

France

Exploration permits are granted for periods of three to five years, renewable up to two times accompanied by substantial acreage relinquishments; 50 percent of the acreage at first renewal, 25 percent of the remaining acreage at second renewal. A 1994 law requires a bidding process prior to granting of an exploration permit. Upon discovery of commercial hydrocarbons, a production concession is granted for up to 50 years, renewable in periods of 25 years each.

Germany

Exploration concessions are granted for an initial period of five years with possible extensions of up to three years at a time for an indefinite period. Extensions are subject to specific, minimum work commitments. Production licenses are held as long as there is production on the license.

Nether lands

Onshore: Exploration drilling permits are issued for a period of two to five years. Permits issued after 1996 are issued for a period of time necessary to perform the activities for which the permit is issued. Production concessions are granted after discoveries have been made, under conditions that are negotiated with the government. Normally, they are field-life concessions covering an area defined by hydrocarbon occurrences.

Offshore: Prospecting licenses issued prior to March 1976 are for a 15-year period, with relinquishment of about 50 percent of the original area required at the end of ten years. Current licenses are for a period of time necessary to perform the activities for which the permit is issued. For commercial discoveries within a prospecting license, a production license is issued for a 40-year period.

Norway

Licenses issued prior to 1972 were for a total period of 46 years, with relinquishment of at least one-fourth of the original area required at the end of the sixth year and another one-fourth at the end

PAGE>

of the minth year. Licenses issued between 1972 and 1997 were for a total period of 36 years, with relinquishment of at least one-half of the original area required at the end of the sixth year. Licenses issued after July 1, 1997 are for a total period of 40 years, with a possible extension to 60 years, and with relinquishment of at least one-half of the original area required at the end of the initial period of six years.

United Kingdom

Acreage terms are fixed by the government but are periodically changed. For example, the regulations governing licenses issued between 1996 and 1998 provide for an initial term of three years with possible extensions of six, fifteen and twenty-four years for a license period of forty-five more years. After the second extension, the license must be surrendered in part. From 1999 onward, the initial term is four years, which may be continued for another three years. After possible surrender of acreage, the license may continue for thirty more years.

ASIA-PACIFIC

Australia

Onshore: Acreage terms are fixed by the individual state and territory governments. These terms and conditions vary significantly between the various states and territories. Exploration permits are normally granted for an initial period of between two to six years, that term being provided by legislation in some states and territories and being fixed by the Minister in others. Renewal periods vary but are available, as of right in some purisdictions and at the Minister's discretion in others, with mandatory relinquishment applying in some states and territories. Production licenses in South Australia are granted for an initial term of 21 years, with subsequent renewals, each for 21 years, for the full area, Production licenses in Queensland are granted for varying periods consistent with expected field lives, with renewals on a similar basis.

Offshore: Within the three nautical mile limit offshore acreage terms are governed by state authorities. For areas beyond that limit, the duration of a tenement is fixed by federal legislation. The conditions applying to those tenements arise from both legislation and the additional conditions imposed by the Joint Authority, which is a body constituted by the federal minister and the relevant state or territory minister. Exploration permits are granted for six years with possible renewals of five year periods. A fifty percent relinquishment of remaining area is mandatory at the end of each period. Retention leases are granted for periods of five years and can be subject to

review at any time during the term, if the Joint Authority considers that the resource might have become commercial. Retention leases can be renewed for five year periods subject to the applicant establishing that recovery is still not commercially viable but is likely to become so within 15 years. Production licenses granted prior to September 1, 1998 were initially for 21 years, with a further renewal of 21 years and thereafter at the discretion of the Joint Authority. Production licenses granted after September 1, 1998 are granted for an indefinite period, effectively the life of the field. If no operations for the recovery of petroleum have been carried on for five years, the production license may be terminated.

Indonesia

Exploration and production activities are governed by production sharing contracts negotiated with the national oil company. The more recent contracts have an overall term of 30 years with possible extensions in some contracts. The initial exploration period is from six to ten years.

Malaysia

Exploration and production activities are governed by production sharing contracts negotiated with the national oil company. The more recent contracts have an overall term of 24 to 37 years with

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possible extensions to the exploration or development periods. The exploration period is five to seven years with the possibility of extensions, after which time areas with no commercial discoveries must be relinquished. The development period is four to five years from commercial discovery, with the possibility of extensions under special circumstances. Areas from which commercial production has not started by the end of the development period must be relinquished if no extension is granted. The total production period is 15 to 25 years from first commercial lifting, not to exceed the overall term of the current contract.

Papua New Guinea

Exploration permits are granted for an initial term of six years with renewals of five years. A 50 percent relinquishment is mandatory at the end of the first term. Production licenses are granted for an initial 25-year period. Renewals of up to 20 years may be granted at the Minister's discretion. Petroleum retention licenses are granted for five-year terms, renewable twice for a maximum retention time of 15 years.

Thailand

The company's concessions and the Petroleum Act of 1972 allow production for 30 years (through 2021) with a possible ten-year extension at terms generally prevalent at the time.

OTHER COUNTRIES

Angola

Exploration and production activities are governed by production sharing agreements negotiated with the national oil company. The exploration period generally consists of four years and an optional phase of two years with no relinquishment requirement after the first phase. The production period (which includes development) is for 25 years.

Argentina

Production licenses are typically for 30 years (20 years with one 10-year extension), preceded by two exploration phases of two years each, with a one year extension available for each exploration phase,

Azerbaijan

The Production Sharing Agreement (PSA) between the Azerbaijan International Operating Company (AIOC) and the Republic of Azerbaijan for the development of the Megastructure is established for an initial period of 30 years starting from the PSA effective date in 1994.

Other exploration and production activities are governed by production sharing agreements negotiated with the national oil company. The exploration period consists of three or four years with the possibility of a two-year extension or three-year extension. The production period, which includes development, is for 25 years or 35 years with the possibility of one or more five-year extensions.

Equatorial Guinea

Exploration and production activities are governed by production sharing contracts negotiated with the state Ministry of Mines and Energy. The exploration term is for 10 to 15 years with limited relinquishments in the absence of commercial discoveries. The production period for crude is 30 years while the production period for gas is 50 years.

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Kazakhstan

Onshore: Exploration and production activities are governed by a joint-venture agreement negotiated with the Republic of Karakhstan. Existing production operations have a 40-year production period that commenced in 1993.

Offshore: Exploration and production activities are governed by a production sharing agreement negotiated with the Republic of Kazakhstan. The exploration period consists of six years with the possibility of a two-year extension. The production period, which includes development, is for 20 years with the possibility of two 10-year extensions.

Nigeria

Exploration licenses are no longer granted in Nigeria.

Exploration and production activities in the deepwater offshore areas are typically governed by production sharing contracts (PSCs) with either the national oil company or by joint ventures. The terms of the contracts are generally 30 years, including a 10-year exploration period (six-year initial exploration phase plus a four-year optional period) with no required relinquishment after the initial phase and a 20-year production period that may be extended. Some exploration activities are carried out in deepwater by joint ventures with indigenous companies holding interests in an oil prospecting license (OPL). OPLs in deepwater offshore areas are valid for 10 years and are non-renewable, while in all other areas the licenses are for five years and also are non-renewable. Demonstrating a commercial discovery is the basis for conversion of an OPL to an oil mining license (OML).

OMLs granted prior to the 1969 Petroleum Act, (i.e. under the Mineral Oils Act 1914, repealed by the 1969 Petroleum Act) were for 30 years onshore and 40 years in offshore areas and are renewable upon 12 months written notice, for further periods of 30 and 40 years, respectively.

OMLs granted under the 1969 petroleum Act have a maximum term of 20 years without distinction for on- or offshore location and are renewable, upon 12 months written notice, for another period of 20 years. However, all such OMLs are also subject to a mandatory 50 percent relinquishment, after the first 10 years of their duration.

In all cases, renewal of OMLs is almost certain if lessee satisfies three conditions, namely, lessee: i) gives the requisite notice within the minimum stipulated period; ii) has paid up to date all rentals, royalties and fees and iii) has fulfilled all lessee's obligations under the OML.

Oatar

The Government of Qatar grants to LNG projects offshore concessions within Qatar's North field to permit the economic development and production of sufficient gas to satisfy the LNG sales obligations of these projects.

Republic of Yemen

Production sharing agreements (PSAB) negotiated with the government entitle the company to participate in exploration operations within a designated area during the exploration period. In the event of a commercial oil discovery, the company is entitled to proceed with development and production operations during the development period. The length of these periods and other specific terms are negotiated prior to executing the production sharing agreement. Existing production operations have a development period extending 20 years from first commercial declaration (made in November 1985 for the Marib PSA and June 1995 for the Januah PSA).

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Venezuela

Exploration and production activities are governed by contracts negotiated with the national oil company. Exploration activity is covered by risk/profit sharing contracts where exploration blocks were awarded for 35 years. Production licenses are awarded for 20 years under production service agreements.

Strategic association agreements (such as the Cerro Negro project) are limited to those projects that require vertical integration. Licenses are awarded for 35 years. Negotiations by the parties require Venezuelan congressional approval.

8. Number of Net Productive and Dry Wells Drilled

<TABLE>

	1999	1998	1997

<s></s>	«C»	«C>	<c></c>
A. Net Productive Exploratory Wells Drilled			
United States	16	23	22
Canada	4	18	32
Burope		8	11
Asia-Pacific.	4	19	10
Other	9	14	5
Total	40	B2	80
	454	****	****
B. Net Dry Exploratory Wells Drilled			
United States	11	20	8
Canada	2	9	10
Burope	5	11	
Asia-Pacific	10	15	5
Other	3	9	10
	***	****	*****
Total,	31	64	46
C. Net Productive Development Wells Drilled	52.		
United States	419	629	457
Canada	308	149	603
Burope	51	54	41
Asia-Pacific.	47	69	72
Other	1.00	32	46
	3.5		
Total	867	933	1.219

D. Net Dry Development Wells Drilled	000	1000	
United States	16	21	22
Canada	12	8	22
Burope.		4	2

Asia-Pacific		3	3
Other	1	2	1
	250	*****	****
Total	31	38	50
		*****	****
Total number of net wells drilled	969	1,117	1,395
	246		

 | | |

- 9. Present Activities
- A. Wells Drilling -- Year-End 1999

< TABLES <CAPTION>

	Gross	Net
<s></s>	<c></c>	<c></c>
United States	77	33
Canada	14	13
Burope	24	8
Asia-Pacific	7	3
Other	27	10
Total	149	67
	570	

 | |<PAGE>

B. Review of Principal Ongoing Activities in Key Areas

During the first 11 months of 1999, in the United States and outside North America, Exxon's activities were conducted, either directly or through affiliated companies, for exploration by Exxon Exploration Company, for selected development activities by Exxon Upstream Development Company and for producing and other development activities by Exxon Company, U.S.A. and Exxon Company, International. In Canada, Exxon's exploration and production activities were conducted by the Resources Division of Imperial Oil Limited, which is 69.6 percent owned by ExxonMobil.

During this same period, Mobil conducted exploration, development and production activities in the United States, Canada and worldwide through its various subsidiaries and affiliated companies, including Aera Energy L.L.C. (*Aera*), a joint venture with Shell Oil Company in California.

Effective December 1, 1999, after the merger of Exxon and Mobil described in Item 1 was completed, ExxonMobil's activities were conducted, either directly or through affiliated companies, for exploration by ExxonMobil Exploration Company, for selected development activities by ExxonMobil Development Company and for producing and other development activities by ExxonMobil Production Company. Activities conducted by Imperial Oil Limited and Aera remained the

Some of the more significant ongoing activities are:

INTTED STATES

Exploration and delineation of additional hydrocarbon resources continued. At year-end 1999, ExxonMobil's inventory of undeveloped acreage totaled 7.8 million net acres. ExxonMobil was active in areas onshore and offshore in the lower 48 states and in Alaska. A total of 27.0 net exploration and delineation wells were completed during 1999.

During 1999, 381.9 net development wells were completed within and around mature fields in the inland lower 48 states.

Participation in Alaska production and development continued and a total of 12.1 met development wells were drilled in 1999.

ExxonMobil's net acreage in the Gulf of Mexico at year-end 1999 was 3.8 million acres. A total of 39.4 net exploration and development wells were completed during the year and development continued on several Gulf of Mexico projects in 1999.

The Genesis field, located in 2,600 feet water depth, began producing in January 1999 from a deep draft caisson vessel (DDCV). The Ursa field, located in 3,900 feet water depth, began producing in March 1999 from a tension leg platform (TLP). In November 1999, production commenced from the Chinook field.

The ExxonMobil-operated Hoover and Diana fields will be jointly developed using a DDCV located in 4,800 feet of water over the Hoover field. Construction and development drilling activities continued in 1999, with a planned start-up of mid-year 2000.

The Nile field, located in 3,500 feet water depth, is a subsea satellite development utilizing nearby existing platform facilities. Detailed engineering is underway, with planned production start-up in mid-2001.

The ExxonMobil-operated Mica field, located in 4,500 feet water depth, is a subsea satellite development utilizing existing platform facilities. Detailed engineering and construction are underway, with planned production start-up in mid-2001.

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The ExxonMobil-operated Marshall and Madison fields, located in 4,800 feet water depth, are proposed subsea satellite developments using the Hoover-Diana DDCV facility. Detailed engineering is ongoing, with planned production start-up in 2002.

CANADA

Gross commercial heavy oil production from Cold Lake averaged 132 thousand barrels per day during 1999. At year end, government approval was received for the next 30 thousand barrel per day expansion. The Sable Offshore Energy Project commenced production in December 1999. Terra Nova is on track for start-up in the first half of 2001.

EUROPE

France

SxxonMobil's net acreage at year-end 1999 Was 0.9 million net acres, with 0.5 net exploration and development wells completed during the year.

Germany

A total of 3.9 million acres were held by ExxonMobil in Germany at year-end, with 7.5 net exploration and development wells drilled and completed during the year. The offshore A6/B4 project commenced development, with start-up expected in 2000.

Netherlands

ExxonMobil's interest in licenses totaled 2,8 million net acres at year-end 1999. During 1999, 8.0 net exploration and development wells were drilled.

During 1999 the D15-FA/FB offshore gas field and the onshore Norg-Zuid and Appelscha fields started up along with the Gaag-II gas plant. The second phase of the Rotterdam oil field development also started up. Construction is in progress on the new onshore gas field Saaksum East.

Norway

ExxonMobil's net interest in licenses at year-end 1999 totaled 1.7 million acres, all offshore. ExxonMobil participated in 13.6 net exploration and development well completions in 1999.

Production was initiated on four developments: Balder, Jotun, Aasgard and Oseberg East. Field development projects for Snorre B, Sygna, Ringhorne and Grane fields are in progress.

United Kingdom

During the year ExxonMobil acquired interests in three new blocks. Net acreage was approximately 3.5 million acres at year-end, all offshore. A total of 34.0 net exploration and development wells were completed during the year. There were successful start-ups of the Ketch, Corvette, Buckland, Bell, Jupiter II and Gannet G fields. Several major projects were underway, including Shearwater, Elgin/Franklin, Triton and Cook.

ASIA-PACIFIC

Australia

ExxonMobil's net year-end 1999 acreage holdings in Australia totaled 10.4 million acres. ExxonMobil drilled a total of 22.9 net exploration and development wells in Australia in 1999. Production commenced at the Blackback field in 1999.

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Indonesia

Deliveries of natural gas from the North Sumatra Offshore "A" field commenced in mid-1999. This gas will supplement other local fields to supply gas for Pertamina's P.T. Arun LNG plant. Net acreage was 9.1 million acres at year-end ExxonMobil participated in 16.5 net exploration and development well completions in 1999.

Malaysia

ExxonMobil has interests in production sharing contracts covering 5.8 million net acres offshore Malaysia. During the year, a total of 17.6 net exploration and development wells were completed. Development drilling was successfully completed at Seligi-P and Bekok-A/B platforms, respectively. Currently, Tapis-E development drilling is ongoing.

Papua New Guinea

At year-end 1999, ExxonMobil's acreage totaled 3.9 million net acres, with 1.8 net exploration and development wells completed during the year.

Thailand

ExxonMobil's net acreage in the Khorat concession totaled 15 thousand net acres at year-end, with 1.6 net exploration and development wells completed during the year.

OTHER COUNTRIES

Angola

Development has commenced on Girassol field in Block 17. Development planning is underway for ExxonMobil-operated discoveries in Block 15 and other Block 17 fields, ExxonMobil's net year-end 1999 acreage holdings totaled 4.3 million acres and 3.2 net exploration and development wells were completed during the year.

Argentina

ExxonMobil's net acreage totaled I.3 million acres at year-end, with 4.1 net exploration and development wells completed during the year.

Azerbaija

At year-end 1999, ExxonMobil's net acreage totaled 0.2 million acres, all of which are located in the Caspian Sea offshore of Azerbaijan. Drilling is continuing, with six gross wells (0.5 net) drilled and completed in 1999. Construction was also completed on the Western Route pipeline.

Equatorial Guinea

ExxonMobil's net acreage totaled 0.7 million acres at year-end, with 1.6 exploration and development wells completed during the year. Construction is in progress on the Jade development with start-up planned in 2000.

Kazakhetar

Construction has started on the Caspian Pipeline Consortium (CPC) pipeline which will be dedicated to transport of Tengis oil production to the Black Sea. The pipeline will displace the high

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cost rail and barge transportation now being used. ExmonMobil's net acreage totaled 0.4 million acres at year-end, with 0.8 net exploration and development wells completed during the year.

Nigeria

ExxonMobil's net acreage totaled 1.4 million acres at year-end, with 11.5 net exploration and development wells completed during the year. Development activities continue offshore deepwater Nigeria Block 212 at Bonga. A deepwater production sharing contract (PSC) decree was issued by the Nigerian Government in 1999 to legislate PSC fiscal provisions.

Oata

Development activities continued on two major liquefied natural gas (LNG) projects in Qatar, Ras Laffan Liquefied Natural Gas Company, Ltd. (RasGas) and Qatar Liquefied Gas Company, Ltd. (Qatargas). RasGas commenced operations in 1999 following completion of its first LNG train. RasGas has a long-term contract with Korea Gas Corporation for supply of 4.8 MTA (million metric tons per year) of LNG. Train 2 is currently under construction with start-up planned in 2000. RasGas also concluded a 7.5 MTA long-term sales and purchase agreement with Petronet LNG Limited of India. Initial deliveries to Petronet are scheduled to begin in 2003. Qatargas delivered its 200th LNG cargo during 1999 since start-up in 1995. Qatargas has long-term contracts to supply 6 MTA of LNG to gas and electric utilities in Japan. Progress continued on negotiations and marketing activities in 1999 on the Enhanced Gas Utilization project to produce natural gas from Qatar's North Field for supply to domestic and regional industries.

Republic of Yemen

ExxonMobil's net acreage in the Republic of Yemen production sharing areas totaled 0.9 million acres onshore at year-end. During the year, 5.5 net exploration and development wells were drilled and completed.

Venezuela

The Cerro Negro heavy oil project began production in November 1999. Construction activities on the Upgrader Facility at the Jose Industrial Complex are on schedule for a 2001 start-up. ExxonMobil's net acreage totaled 0.5 million acres at year-end with 19.0 net exploration and development wells completed during the year.

WORLDWIDE EXPLORATION

Exploration activities were underway in several areas in which ExxonMobil has no established production operations. A total of 60 million net access were held at year-end, and 3.0 net exploration wells were completed during the year.

Information with regard to mining activities follows:

Syncrude Operations

Syncrude is a joint-venture established to recover shallow deposits of tar sands using open-pit mining methods, to extract the crude bitumen, and to produce a high-quality, light (32 degree API), sweet, synthetic crude oil. The Syncrude operation, located near Fort McMurray, Alberta, Canada, exploits a portion of the Athabasca Oil Sands Deposit. The location is readily accessible by public road. The produced synthetic crude oil is shipped from the Syncrude site to Edmonton in the Alberta Oil Sands Pipeline owned by the Alberta Energy Company. Since startup in 1978, Syncrude has produced

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over one billion barrels of synthetic crude oil, Imperial Oil Limited is the owner of a 25 percent interest in the joint-venture. Exxon Mobil Corporation has a 69.6 percent interest in Imperial Oil Limited.

Operating License and Leases

Syncrude has an operating license issued by the Province of Alberta which is effective until 2035. This license permits Syncrude to mine tar sands and produce synthetic crude oil from approved development areas on tar sands leases. Syncrude holds eight tar sands leases covering 255,458 acres in the Athabasca oil Sands Deposit. Issued by the Province of Alberta, leases are automatically renewable as long as tar sands operations are ongoing or the leases are part of an approved development plan. Syncrude leases 17, 22, 10, 12, 34 (containing proven reserves) and 31 (containing no proven reserves) have development plans approved by the Alberta Energy and Utilities Board. Syncrude is filing development plans for the remaining two leases (containing no proven reserves) in order to continue them. There were no known previous commercial operations on these leases prior to the start-up of operations in

1978

Operations, Plant and Equipment

Operations at Syncrude involve three main processes: open pit mining, extraction of crude bitumen and upgrading of crude bitumen into synthetic crude oil. In the Base mine (lease 17), the mining and transportation system uses draglines, bucketwheel reclaimers and belt conveyors. In the North mine (leases 17 and 22) and in the Aurora mine (leases 10, 12 and 34), a truck, showel and hydrotransport system is used. Production from the Aurora mine is scheduled to begin in 2000. The extraction plant, which separates crude bitumen from sand, processes approximately 480,000 tons of tar sands a day, producing more than 90 million barrels of crude bitumen a year. This represents recovery of 91 percent of the crude bitumen contained in the tar sands.

Crude bitumen extracted from tar sands is refined to a marketable hydrocarbon product through a combination of carbon removal in large, high-temperature, fluid-coking vessels and by hydrogen addition in high-temperature, high-pressure, hydrocracking vessels. These processes remove carbon and sulfur and reformulate the crude into a low viscosity, high-quality synthetic crude oil product. In 1995 this upgrading process yielded 0.839 barrels of synthetic crude oil per barrel of crude bitumen. Since startup in 1978, the capacity of each of the two fluid cokers has been increased from 72.900 to 114,000 barrels of crude bitumen per day and the hydrocracker capacity has been increased from 40,000 to 55,000 barrels per day. About two thirds of the synthetic crude oil is processed by Edmonton area refineries and the remaining one third is pipelined to refineries in eastern Canada and the mid-western United States. Electricity is provided to Syncrude by a 270 megawatt electricity generating plant located at the Syncrude site. The generating plant is owned by a third party. Imperial Oil Limited's 25 percent share of net investment in plant, property and equipment, including surface mining facilities. transportation equipment and upgrading facilities is \$660 million.

Synthetic Crude Oil Reserves

The crude bitumen is contained within the unconsolidated sands of the McMurray Formation. Ore hodies are buried beneath 50 to 150 feet of overburden, have bitumen grades ranging from 4 to 14 weight percent and ore thickness of 120 to 160 feet. Estimates of synthetic crude oil reserves are based on detailed geological and engineering assessments of in-place crude bitumen volume, the mining plan, historical extraction recovery and upgrading yield factors, installed plant operating capacity and operating approval limits. The in-place volume, depth and grade are established through extensive and closely spaced core drilling. Proven reserves include the operating Base and North mines and the Aurora mine. In accordance with the approved mining plan, there are an estimated 3,680 million tons of extractable tar sands in the Base and North mines, with an average bitumen grade of 10.4 weight percent. In addition, at the Aurora mine, there are an estimated 1,655 million tons of extractable tar

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sands at an average bitumen grade of 11.3 weight percent. After deducting royalties payable to the Province of Alberta, Imperial Oil Lamited estimates its 25 percent net share of proven reserves is equivalent to 577 million barrels of synthetic crude oil.

ExxonMobil Share of Net Proven Syncrude Reserves(1)

<TABLE>

<caption></caption>			
	Synthet	ic Crude 0	11

	Base Mine and	1	
	North Mine	Aurora Mi	ne Total
	distribution.	· Paratitant	
	(million	s of barrel	15)
«S»	<c></c>	<c></c>	<c></c>
January 1, 1999	407	190	597
Revision of previous estimate		/44	77
Production	(20)	124	(20)

December 31, 1999	387	190	577
	FFF.	100.00	400

 | | || | | | |
 Net reserves are the company's share of reserves after deducting royalties payable to the Province of Alberta.

Syncrude Operating Statistics (total operation)

<TABLE>

<caption></caption>						
	1999	1998	1997	1996	1995	
			+-2	****	80000	
<5>	<c></c>	«C>	«C»	<c></c>	<c></c>	
Operating Statistics						
Overburden removed (millions of cubic yards) (1) Strip Ratio (volume of overburden to volume of	83.8	79.9	47.0	44.9	60.0	
tar sands) (1)	1.04	1.07	0.62	0.61	0.89	
Tar sands mined (million of tons)	178.7	165.9	166.7	163.7	164.4	
Average bitumen grade (weight percent)	10_8	10.7	10.6	10.4	10.4	
	-		-	23555	858+8	
Crude bitumen in mined tar sands (millions of						
tons)	19.3	17.8	17.7	17.0	17.1	
Average extraction recovery (percent)	91.4	91.6	91.0	90.0	90.3	
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Crude bitumen production (millions of						
barrels) (2)	99.6	92.1	90.3	86.4	87.4	
Average upgrading yield (percent)	83.9	84.6	84.5	84.2	84.3	

Gross synthetic crude oil produced (millions of </TABLE>

(1) Includes pre-stripping of mine areas.

- (2) Crude bitumen production = crude bitumen in mined tar sands x average extraction recovery x 5.65 bbls/ton bitumen.
 (3) Reflects ExxonMobil's 25% interest in production less applicable royalties payable to the Province of Alberta.

Item 3, Legal Proceedings.

On October 29, 1999, a previously-reported matter, involving allegations by the Pennsylvania Department of Environmental Protection (the *PDEP*) that Mobil Oil Corporation had violated the Pennsylvania Tank Act by knowingly delivering products into unregistered tanks, was settled. The PDEP had sought penalties of up to \$295,000; the matter was settled with the payment of a \$90,000 penalty.

Refer to the relevant portions of Note 19 on page F29 of the accompanying financial section of the 1999 Annual Report to shareholders for additional information on legal proceedings.

Item 4. Submission of Matters to a Vote of Security Holders.

None.

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«PAGES

Executive Officers of the Registrant (pursuant to Instruction 3 to Regulation S-K, Item 401(b)).

TABLES <CAPTION>

		Age as of March 30,	
Name		2000	Title (Held Office Since)

<s></s>		cC>	«C>
L. R. F	Raymond	61	Chairman of the Board (1993)
L. A. B	loto	61	Vice Chairman of the Board (1999)
R. Daha	n	58	Senior Vice President (1995)
H. J. I	ongwell	58	Senior Vice President (1995)
E. A. P	enna	55	Senior Vice President (1999)
H. R. C	ramer	49	Vice President (1999)
M. E. F	Poster	57	President, ExxonMobil Development Company (1999)
D. D. H	lumphreys.	52	Vice President and Controller (1997)
K. T. K	conce	61	Vice President (1999)
C. W. M	atthews	55	Vice President and General Counsel (1995)
5. R. M	CGi11	57	Vice President (1998)
J. T. M	cmillan	63	Vice President (1997)
S. D. P	ryor	50	Vice President (1999)
F. A. R	isch	57	Vice President and Treasurer (1999)
D. S. S	anders	60	Vice President (1999)
J. S. S	imon	56	Vice President (1999)
P. E. S	ullivan	56	Vice President and General Tax Counsel (1995)
J. L. T	hompson	60	Vice President (1991)
T. P. T	ownsend	63	Vice President Investor Relations (1990)
			and Secretary (1995)
TABLE>			Committee and the committee of the commi

For at least the past five years, Messrs. Longwell, Matthews. Raymond, Risch, Sullivan, Thompson and Townsend have been employed as executives of the registrant. Mr. Raymond also holds the title of president.

The following executive officers of the registrant have also served as executives of the subsidiaries, affiliates or divisions of the registrant shown opposite their names during the five years preceding December 31, 1999.

<TABLE> SS>
SSO Malaysia Berhad.
Simon
SSSO Malaysia Berhad.
SSO Production Malaysia Inc.
SESSO Production Malaysia Inc.
SEXON Coal and Minerals Company.
SSANCH COAL AND MINERAL COMPANY.
SSANCH COAL AND MINERAL COMPANY.
SONCH COMPANY, International.
SEXON COMPANY, U.S.A.
SEXON COMPANY, U.S.A.
SEXON COMPANY, U.S.A.
SEXON UPStream Development Company.
SEXON Upstream Development Company.
SEXON Ventures (CIS) Inc.
SEXONMOBIL Chemical Company.
SSANCH SONCH SANCH SONCH MCMILIAN
SEXONMOBIL Fuels Marketing Company.
SEXONMOBIL Fuels Marketing Company.
Cramer
SEXONMOBIL Gas Marketing Company.
SEXONMOBIL Gas Marketing Company.
Cramer
SEXONMOBIL Gas Marketing Company.
MCGILL
SEXONMOBIL LUbricants & Petroleum Specialties
Company.
Pryor <5> Company Pryor
ExconMobil Production Company Koonce
ExconMobil Refining & Supply Company Simon Mobil Asia Pacific Pty Ltd. Pryor
Mobil Chemical Company Pryor Mobil Corporation ... Cramer, Noto and Mobil Europe and Central Asia Limited ... Cramer Mobil Europe Limited ... Cramer Mobil Corporation ... Pryor and Renna Cramer, Noto and Renna Mobil South, Inc. Cramer

Officers are generally elected by the Board of Directors at its meeting on the day of each annual election of directors, each such officer to serve until his or her successor has been elected and qualified.

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PART II

Item 5. Market for Registrant's Common Stock and Related Shareholder Matters.

Incorporated by reference to the quarterly information which appears on page F38 of the accompanying financial section of the 1999 Annual Report to shareholders.

In accordance with the registrant's 1997 Nonemployee Director Restricted Stock Plan, each newly elected nonemployee director (4 persons) was granted 4,000 shares of restricted stock on November 10, 1999, and each incumbent nonemployee director [13 persons) was granted 600 shares of restricted stock on January 1, 2000. These grants are exempt from registration under bonus stock interpretations such as the "no-action" letter to Pacific Telesis Group (June 30, 1992).

Item 6. Selected Financial Data.

<TABLE> <CAPTION>

		Years Ended December 31,								
				1998		1997		1996		1995
				f dollar						
<s></s>	<1	2>	<	2>	<	C>	-	.>	<(>
Sales and other operating revenue, including excise taxes.	S	182.529	s	165,627	5	197,735	\$2	10.038	Si	95,200
Net income	-,		100		7			coverie		23,435
Before cumulative effect of										
Cumulative effect of accounting	\$	7,910	\$	8.144	S	11.732	\$	10,474	\$	8.646
change	5		5	(70)	S	6.0	5	1.64	\$	
The second secon	-		4		-			******	4	*****
Net income per common share	ş	7,910	\$	8,074	ş	11,732	ş	10,474	\$	8,846
Before cumulative effect of										
Cumulative effect of accounting	\$	2.28	5	2.33	\$	3.32	\$	2,95	ş	2.48
change	\$	100	ş	(0,02)	5		\$	34	\$	
Net income	5	2 24		2.31	2	2 22	2	2 65		2.48
Net income per common share -	9	2.25	2	2.31	*	3.34	4	2.95	3	2.40
assuming dilution										
Before cumulative effect of					2	0.00	2	0.00		10.75
accounting change	\$	2.25	S	2.30	ş	3.28	ş	2,91	ş	2.46
change	\$	4.4	\$	(0.02)	\$		\$	19.00	\$	
	4.4		4			*****		*****		*****
Net income	5	2.25	\$	2.28	Ş	3.28	\$	2.91	\$	2,46
Cash dividends per common share .	\$	1.687	\$	1.666	5	1.619	Ş.	1.538	\$	1.463
Total assets	\$1	44,521	\$1	39,335	\$	143,751	\$1	46,939	\$1	39,100
Long-term debt	\$	8,402	5	8,532	5	10,868	\$	11,986	S	12,853

Item 7. Management's Discussion and Analysis of Financial Condition and

Results of Operations.

Incorporated by reference to pages F6 through F12 of the accompanying financial section of the 1999 Annual Report to shareholders.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Incorporated by reference to the section entitled "Market Risks, Inflation and Other Uncertainties" beginning on page F9 excluding the part entitled "Inflation and Other Uncertainties" and to the tenth paragraph of the section entitled "Liquidity and Capital Resources" on page F11 of the accompanying financial section of the 1999 Annual Report to shareholders. All statements other than historical information incorporated in this Item 7A are forward looking statements. The actual impact of future market changes could differ materially due to, among other things, factors discussed in this report.

«PAGE»

Item 8. Financial Statements and Supplementary Data.

Reference is made to the Index to Financial Statements on page 21 of this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

PART III

Item 10. Directors and Executive Officers of the Registrant.

Incorporated by reference to the sections entitled "Board of Directors Proposal: Election of Directors" and "Section 16(a) Beneficial Ownership Reporting Compliance" of the registrant's definitive proxy statement for the 2000 annual meeting of shareholders (the "2000 Proxy Statement").

Item 11. Executive Compensation.

Incorporated by reference to the section entitled "Director Compensation" and the section entitled "Executive Compensation Tables" of the registrant's 2000 Proxy Statement,

Item 12. Security Ownership of Certain Beneficial Owners and Management.

Incorporated by reference to the section entitled "Director and Executive

Officer Stock Dwnership" of the registrant's 2000 Proxy Statement

Item 13. Certain Relationships and Related Transactions

None.

PART IV

Item 14. Exhibits, Financial Statement Schedules and Reports on Form 8-K.

- (a) (1) and (a) (2) Financial Statements: See Index to Financial Statements on page 21 of this Annual Report on Parm 10-K.
- (a) (3) Exhibits: See Index to Exhibits on page 22 of this Annual Report on Form 10-K.
- (b) Reports on Form 8-K. On December 1, 1999, the registrant filed a Current Report on Form 8-K reporting under Item 2 (Acquisition or Disposition of Assets) and Item 5 (Other Events) the consummation of the merger between Exxon Corporation and Mobil Corporation.

On February 11, 2000, the registrant filed an amendment of its Current Report on Form 8-K filed on December 1, 1999, to include financial statements of businesses acquired and pro forms financial information in accordance with Item 7.

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SIGNATURES

Pursuant to the requirements of Section 13 of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

EXXON MOBIL CORPORATION

By: /s/ LEE R. RAYMOND

(Lee R. Raymond, Chairman of the Board)

Dated March 23, 2000

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Richard E. Gutman. Paul A. Hanson and Brian A. Maher, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<1ABUS>						
<pre><s> /s/ LEE R. RAYMOND</s></pre>	<c></c>	rman of the Board	≪C>		23.	2000
	(Princ	ipal Executive Of				
(Lee R. Raymond)						
/s/ LUCIO A. NOTO	Vi	ce Chairman of the	Board M	arch	23.	2000
(Lucio A. Noto)						
/s/ MICHAEL J. BOSKIN		Director	M	arch	23,	2000
(Michael J. Boskin)						

							18					
<\$>		Comment	«C»									
/s/ RENE DAHAN		Director	March	23,	2000	0						
(Rene Dahan)												
/s/ WILLIAM T. ESREY		Director	March	23,	200	0						
(William T. Esrey)												
/s/ DONALD V. PITES		Director	March	23,	200	0						
(Donald V. Fites)	-											
/s/ JESS HAY		Director	March	23,	2000	Ö						

(Jess Hay)	_			
/s/ CHARLES A. HEIMBOLD, JR.	Director	March	23,	2000
(Charles A. Heimbold, Jr.)	-			
/s/ JAMES R. HOUGHTON	Director	March	23.	2000
(James R. Houghton)	_			
/s/ WILLIAM R. HOWELL	Director	March	23,	2000
(William R. Howell)	_			
/s/ HELENE L. KAPLAN	Director	March	23,	2000
(Helene L. Kaplan)	_			
/s/ REATHA CLARK KING	Director	March	23,	2000
(Reatha Clark King)	-			
/s/ PHILIP E. LIPPINCOTT	Director	March	23,	2000
(Philip E. Lippincott)	_			
/s/ HARRY J. LONGWELL	Director	March	23,	2000
ALLEGA TO THE PERSON	_			
(Harry J. Longwell)				
The state of the s	19			
PAGE>	3 1			
/TABLE>	19 «C> Director	<c> March</c>	23,	2000
·/Table> Fage> Table> S>	«C»		23,	2000
PAGE> TABLE> S> /s/ J. RICHARD MUNRO	«C»			
PAGE> TABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO)	<c> Director</c>	March		
PAGE> TABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO) /s/ MARILYN CARLSON NELSON	<c> Director</c>	March	23.	2000
PAGE> STABLE> STABLE> SS /S/ J. RICHARD MUNRO (J. RICHARD MUNRO) /S/ MARILYN CARLSON NELSON (Marilyn Carlson Nelson)	C> Director Director	March March	23.	2000
/TABLE> FAGE> TABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO) /s/ MARILYN CARLSON NELSON (Marilyn Carlson Nelson) /s/ EUGENE A. RENNA	C> Director Director	March March	23,	2000
PAGE> TABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO) /s/ MARILYN CARLSON NELSON (Marilyn Carlson Nelson) /s/ EUGENE A. RENNA (Eugene A. Renna)	Director Director	March March	23,	2000
/TABLE> FAGE> TABLE> S> /S/ J. RICHARD MUNRO (J. RICHARD MUNRO) /S/ MARILYN CARLSON NELSON (Marilyn Carlson Nelson) /S/ EUGENE A. RENNA (Eugene A. Renna) /S/ WALTER V. SHIPLEY	Director Director Director Director Controller (Principal	March March	23. 23.	2000 2000 2000
PAGE> STABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO (J. RICHARD MUNRO) /s/ MARILYN CARLSON NELSON (MARILYN CARLSON NELSON) /s/ EUGENE A. RENNA (EUGENE A. RENNA (EUGENE A. RENNA) /s/ WALTER V. SHIPLEY (Walter V. Shipley)	Director Director Director	March March March	23. 23.	2000 2000 2000
PAGE> TABLE> S> /s/ J. RICHARD MUNRO (J. RICHARD MUNRO (J. RICHARD MUNRO) /s/ MARILYN CARLSON NELSON (Marilyn Carlson Nelson) /s/ EUGENE A. RENNA (Eugene A. Renna) /s/ WALTER V. SHIPLEY (Walter V. Shipley) /s/ DONALD D. HUMPHREYS	Director Director Director Director Controller (Principal	March March March	23, 23, 23,	2000 2000 2000 2000

INDEX TO FINANCIAL STATEMENTS

The consolidated financial statements, together with the report thereon of PricewaterhouseCoopers LLP dated February 23, 2000, appearing on pages F13 to F32; the Quarterly Information appearing on page F38 and the Supplemental Information on 011 and Gas Exploration and Production Activities appearing on pages F33 to F37 of the accompanying financial section of the 1999 Annual Report to shareholders are incorporated in this Annual Report on Form 10-K as Exhibit 13. With the exception of the aforementioned information, no other data appearing in the accompanying financial section of the 1999 Annual Report to shareholders is deemed to be filed as part of this Annual Report on Form 10-K under Item 8. Consolidated Financial Statement Schedules have been omitted because they are not applicable or the required information is shown in the consolidated financial statements or notes thereto.

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INDEX TO EXHIBITS

	INDEX TO EXHIBITS	
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3(1).	Restated Certificate of Incorporation, as restated November 30, 1999.	
3(ii).	By-Laws, as revised to November 30, 1999.	
10(iii) (a):	1993 Incentive Program, as amended.*	
10(iii) (b).	Plan for Deferral of Nonemployee Director Compensation and	
	Fees, as amended (incorporated by reference to Exhibit 10(iii)(b) to the registrant's Annual Report on Form 10-K for 1998).*	
10(iii)(c).	Restricted Stock Plan for Nonemployee Directors, as amended (incorporated by reference to Exhibit 10(iii)(c) to the registrant's Annual Report on Form 10-K for 1996).*	
10(iii) (d).	ExxonMobil Executive Life Insurance and Death Benefit Plan.*	
10(iii)(e).	Short Term Incentive Program, as amended.*	

10(111)(£)	1997 Nonemployee Director Restricted Stock Plan (incorporated by reference to Exhibit 10(iii)(f) to the
10(iii)(g).	registrant's Annual Report on Form 10-K for 1996).* 1995 Mobil Incentive Compensation and Stock Ownership Plan (incorporated by reference to the Definitive Proxy Statement of Mobil Corporation filed March 20, 1995).*
10(iii)(h).	Mobil Oil Corporation's Executive Life Insurance Program (incorporated by reference to Exhibit 10.4 to the Annual Report on Form 10-K of Mobil Corporation filed March 31, 1999).
10(111)(1)-	Supplemental Employees Savings Plan of Mobil Oil Corporation (incorporated by reference to Exhibit 10.5 to the Annual Report on Form 10-K of Mobil Corporation filed March 31, 1999).*
12.	Computation of ratio of earnings to fixed charges.
11.	Pages F2 and F6 through F39 of the Financial Section of the registrant's 1999 Annual Report to shareholders.
21	Subsidiaries of the registrant
23.1	Consent of PricewaterhouseCoopers LLP, Independent Accountants.
23.2	Consent of Ernst & Young LLP, Independent Auditors.
27.1	Financial Data Schedule (included only in the electronic filing of this document).
27.2	Restated Financial Data Schedules (included only in the electronic filing of this document. Restated 1997 and 1998 annual periods to reflect accounting for the merger of Exxon and Mobil as a pooling of interests).
27.3	Restated Financial Data Schedules (included only in the electronic filing of this document. Restated 1999 interim periods to reflect accounting for the merger of Exxon and Mobil as a pooling of interests).
27.4	Restated Financial Data Schedules (included only in the electronic filing of this document. Restated 1998 interim periods to reflect accounting for the merger of Exxon and Mobil as a pooling of interests).
99. :/TABLE>	Report of Ernst & Young LLP, Independent Auditors.

Compensatory plan or arrangement required to be identified pursuant to Item 14(a)(3) of this Annual Report on Form 10-K.

The registrant has not filed with this report copies of the instruments defining the rights of holders of long-term debt of the registrant and its subsidiaries for which consolidated or unconsolidated financial statements are required to be filed. The registrant agrees to furnish a copy of any such instrument to the Securities and Exchange Commission upon request.

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<DESCRIPTION>RESTATED CERTIFICATE OF INCORPORATION
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EXHIBIT 3(i)

RESTATED

CERTIFICATE OF INCORPORATION

of

EXXON MOBIL CORPORATION

Exxon Mobil Corporation, a corporation organized and existing under the laws of the State of New Jersey, restates and integrates its Certificate of Incorporation, as heretofore restated and amended, to read in full as herein set forth:

FIRST. The name of the corporation is:

EXXON MOBIL CORPORATION

SECOND. The address of the corporation's registered office is 830 Bear Tavern Road, West Trenton, New Jersey 08628-1020. The name of the corporation's registered agent at such address, upon whom process against the corporation may be served, is Corporation Service Company.

THIRD. The purposes for which the corporation is organized are to engage in any or all activities within the purposes for which corporations now or at any time hereafter may be organized under the New Jersey Business Corporation Act and under all amendments and supplements thereto, or any revision thereof or any statute enacted to take the place thereof, including but not limited to the following:

(1) To do all kinds of mining, manufacturing and trading business; transporting goods and merchandise by land or water in any manner; to buy, sell. lease and improve lands; to build houses, structures, vessels, cars, wharves, docks and piers; to lay and operate pipelines; to erect and operate telegraph and telephone lines and lines for conducting electricity; to enter into and carry out contracts of every kind pertaining to its business; to acquire, use, sell and grant licenses under patent rights; to purchase or otherwise acquire, hold, sell, assign and transfer shares of capital stock and bonds or other evidences of indebtedness of corporations, and to exercise all the privileges of ownership including voting upon the securities so held; to carry on its business and have offices and agencies therefor in all parts of the world; and to hold, purchase, mortgage and convey real estate and personal property within or without the State of New Jersey;

(2) To engage in any activities encompassed within this Article Third

directly or through a subsidiary or subsidiaries and to take any and all acts deemed appropriate to promote the interests of such subsidiary or subsidiaries, including, without limiting the foregoing, the following: making contracts and incurring liabilities for the benefit of such subsidiary or subsidiaries; transferring or causing to be transferred to any such subsidiary or subsidiaries assets of this corporation; guaranteeing dividends on any shares of the capital stock of any such subsidiary; guaranteeing the principal and interest or either of the bonds, debentures, notes or other evidences of indebtedness issued or obligations incurred by any such subsidiary or

subsidiaries; securing said bonds, debentures, notes or other evidences of indebtedness so guaranteed by mortgage of or security interest in the property of this corporation; and contracting that said bonds, debentures, notes or other evidences of indebtedness so guaranteed, whether secured or not, may be convertible into shares of this corporation upon such terms and conditions as may be approved by the board of directors,

- (3) To guarantee the bonds, debentures, notes or other evidences of indebtedness issued, or obligations incurred, by any corporation, partnership, limited partnership, joint venture or other association in which this corporation at the time such guarantee is made has a substantial interest or where such guarantee is otherwise in furtherance of the interests of this corporation; and
- (4) To exercise as a purpose or purposes each power granted to corporations by the New Jersey Business Corporation Act or by any amendment or supplement thereto or by any statute enacted to take the place thereof, insofar as such powers authorize or may hereafter authorize corporations to engage in activities.
- FOURTH. The aggregate number of shares which the corporation shall have authority to issue is four billion seven hundred million (4,700,000,000) shares, divided into two hundred million (200,000,000) shares of preferred stock without par value and four billion five hundred million (4,500,000,000) shares of common stock without par value.
- (1) The board of directors of the corporation is authorized at any time or from time to time (i) to divide the shares of preferred stock into classes and into series within any class or classes of preferred stock; (ii) to determine for any such class or series its designation, relative rights, preferences and limitations; (iii) to determine the number of shares in any such class or series (including a determination that such class or series shall consist of a single share), (iv) to increase the number of shares of any such class or series previously determined by it and to decrease such previously determined by it and to decrease such previously determined number of shares of such class or series then outstanding; (v) to change the designation or number of shares, or the relative rights, preferences and limitations of the shares, of any theretofore established class or series no shares of which have been issued, and (vi) to cause to be executed and filed without further approval of the shareholders such amendment or amendments to the Restated Certificate of Incorporation as may be required in order to accomplish any of the foregoing. In particular, but without limiting the generality of the foregoing, the board of directors is authorized to determine with respect to the shares of any class or series of preferred stock:
- (a) whether the holders thereof shall be entitled to cumulative, non-cumulative or partially cumulative dividends or to no dividends and, with respect to shares entitled to dividends, the dividend rate or rates (which may be fixed or variable and may be made dependent upon facts ascertainable outside of the Restated Certificate of Incorporation) and any other terms and conditions relating to such dividends:
- (b) whether the holders thereof shall be entitled to receive dividends payable on a parity with or subordinate or in preference to the dividends payable on any other class or series of shares of the corporation;

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- (c) whether, and if so to what extent and upon what terms and conditions, the holders thereof shall be entitled to preferential rights upon the liquidation of, or upon any distribution of the assets of, the corporation;
- (d) whether, and if so upon what terms and conditions, such shares shall be convertible into other securities;
- (e) whether, and if so upon what terms and conditions, such shares shall be redeemable;
- (f) the terms and amount of any sinking fund provided for the purchase or redemption of such shares; and
- (g) the voting rights, if any, to be enjoyed by such shares and the terms and conditions for the exercise thereof.
- (2) Each holder of shares of common stock shall be entitled to one vote for each share of common stock held of record by such holder on all matters on which holders of shares of common stock are entitled to vote.
- (1) No holder of any shares of common or preferred stock of the corporation shall have any right as such holder (other than such right, if any, as the board of directors in its discretion may determine) to purchase, subscribe for or otherwise acquire any unissued or treasury shares, or any option rights, or securities having conversion or option rights, of the corporation now or hereafter authorized.
- (4) The relative voting, dividend, liquidation and other rights, preferences and limitations of the shares of the class of preferred stock designated "Class A Preferred Stock" and the class of preferred stock designated "Class B Preferred Stock" are as set forth in this Article FOURTH and in Exhibit A to this Restated Certificate of Incorporation.

FIFTH. The following is a list of the names and residences of the

original shareholders, and of the number of shares held by each:

H.M. Flagler Paul Babcock, Jr. of New York City, One share. of Jersey City, of Plainfield, New Jersey. One share James McGee Thos. C. Bushnell of Morristown, New Jersey, One share John D. Rockefeller of Cleveland, Ohio, of New York City, of New York City, of New York City, of New York City, of Cleveland, Ohio, Wm. Rockefeller J.A. Bostwick John D. Archbold O.N. Payne of Philadelphia, Pa., Wm. G. Warden Benj. Brewster Chas. Pratt and H.M. Flagler of New York City. of Brooklyn, N.Y.. of New York City.

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Trustees of Standard Oil Trust, twenty-nine thousand nine hundred and ninety-six shares (29,996), of which twenty-one thousand seven hundred and twenty-four shares (21,724) were issued for property purchased and necessary for the business of this corporation.

SIXTH. The number of directors of the corporation as of November 30, 1999 is 19 and their names and business office addresses are:

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Dr. Michael J. Boskin Hoover Institution Stanford University Stanford, California 94305-6010

Mr. Rene Dahan 5959 Las Colinas Boulevard Irving, Texas 75039-2298

Mr. William T. Esrey Sprint Corporation 2330 Shawnee Mission Pkwy. Westwood, Kansas 66205

Mr. Donald V. Fites 100 N. E. Adams Street Peoria, IL 61629-9210

Mr. Jess Hay Chase Tower 2200 Ross Avenue Dallas, Texas 75201-2764

Mr. Charles A. Heimbold, Jr. Bristol-Myers Squibb Company 345 Park Avenue New York, NY 10154-0037

Mr. James R. Houghton 80 East Market Street Corning, New York 14830

Mr. William R. Howell 6501 Legacy Drive Plano, Texas 75024-3698

Mrs. Helene L. Kaplan Skadden, Arps. Slate, Meagher & Flom 919 Third Avenue New York, NY 10022-3897

Dr. Reatha Clark King General Mills Foundation One General Mills Boulevard Minneapolis, Minnesota 55426 Mr. Phillip E. Lippincott P.O. Box 2159 Park City, Utah 84060

Mr. Harry J. Longwell 5959 Las Colinas Boulevard Irving, Texas 75039-2298

Mrs. Marilyn Carlson Nelson Carlson Companies, Inc. 1405 Xenium Lane North Plymouth, Minnesota 55441

Mr. J. Richard Munro Time Warner Cable 290 Harbor Drive Stamford, CT 06902

Mr. Lucio A. Noto 5959 Las Colinas Boulevard Irving, TX 75039-2298

Mr. Lee R. Raymond 5959 Las Colinas Boulevard Irving, Texas 75039-2298

Mr. Eugene A. Renna 5959 Las Colinas Boulevard Irving, Texas 75039-2298

Mr. Walter V. Shipley The Chase Manhattan Corporation 270 Park Avenue New York, New York 10017-2070

Mr. Robert E. Wilhelm 5959 Las Colinas Boulevard Irving, Texas 75039-2298

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SEVENTH. The number of directors at any time may be increased or diminished by vote of the board of directors, and in case of any such increase the board of directors shall have power to elect each such additional director to hold office until the next succeeding annual meeting of shareholders and until his successor shall have been elected and qualified.

The board of directors, by the affirmative vote of a majority of the directors in office, may remove a director or directors for cause where, in the judgment of such majority, the continuation of the director or directors in office would be harmful to the corporation and may suspend the director or directors for a reasonable period pending final determination that cause exists for such removal.

The board of directors from time to time shall determine whether and to what extent, and at what times and places, and under what conditions and regulations, the accounts and books of the corporation, or any of them, shall be open to the inspection of the shareholders; and no shareholder shall have any right of inspecting any account or book or document of the corporation, except as conferred by statute or authorized by the board of directors, or by a resolution of the shareholders.

EIGHTH. The following action may be taken by the affirmative vote of a majority of the votes cast by the holders of shares of the corporation entitled to yor thereon.

- (1) The adoption by the shareholders of a proposed amendment of the certificate of incorporation of the corporation;
- (2) The adoption by the shareholders of a proposed plan of merger or consolidation involving the corporation;
- (3) The approval by the shareholders of a sale, lease, exchange, or other disposition of all, or substantially all, the assets of the corporation otherwise than in the usual and regular course of business as conducted by the corporation; and

(4) Dissolution.

NINTH. Except as otherwise provided by statute or by this certificate of incorporation or the by-laws of the corporation as in each case the same may be amended from time to time, all corporate powers may be exercised by the board of directors. Without limiting the foregoing, the board of directors shall have power, without shareholder action:

- (1) To authorize the corporation to purchase, acquire, hold, lease, mortgage, pledge, sell and convey such property, real, personal and mixed, without as well as within the State of New Jersey, as the board of directors may from time to time determine, and in payment for any property to issue, or cause to be issued, shares of the corporation, or bonds, debentures, notes or other obligations or evidence of indebtedness thereof secured by pledge, security interest or mortgage, or unsecured; and
- (2) To authorize the borrowing of money, the issuance of bonds, debentures, notes and other obligations or evidences of indebtedness of the corporation, secured or unsecured, and the inclusion of provisions as to redeemability and convertibility into shares of

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stock of the corporation or otherwise, and, as security for money borrowed or bonds, debentures, notes and other obligations or evidences of indebtedness issued by the corporation, the mortgaging or pledging of any property, real, personal, or mixed, then owned or thereafter acquired by the corporation.

TENTH. To the full extent from time to time permitted by law, no director or officer of the corporation shall be personally liable to the corporation or its shareholders for damages for breach of any duty owed to the corporation or its shareholders. Neither the amendment or repeal of this Article, nor the adoption of any provision of this certificate of incorporation inconsistent with this Article, shall eliminate or reduce the protection afforded by this Article to a director or officer of the corporation with respect to any matter which occurred, or any cause of action, suit or claim which but for this Article would have accrued or arisen, prior to such amendment, repeal or adoption.

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EXHIBIT A

PART I

Class A Preferred Stock

Section 1. Designation and Amount; Special Purpose Restricted
Transfer Issue.

- (A) The shares of this class of preferred stock shall be designated as "Class A Preferred Stock" (referred to herein as the "Class A Preferred Stock") and the aggregate number of shares constituting such class which the Corporation shall have the authority to issue is 16,500,000. The shares of this class shall have a stated value of \$61.50 per share (the "Stated Value").
- (B) Shares of Class A Preferred Stock shall be issued only to a trustee acting on behalf of the Plan (as defined in Section 9(F)(vii)). In the event of any transfer of shares of Class A Preferred Stock to any person other than the Corporation or the trustee of the Plan, the shares of Class A Preferred Stock to transferred, upon such transfer and without any further action by the Corporation's Common Stock without par value (the "Common Stock") pursuant to Section 5 hereof and no such transferee shall have any of the voting powers, preferences and relative, participating, optional or special rights ascribed to shares of Class A Preferred Stock into which such shares of Class A Preferred Stock into which such shares of Class A Preferred Stock into which such shares of Class A Preferred Stock into which such shares of Class A Preferred Stock shall be treated for all purposes as the record holder of the shares of Common Stock into which such shares of Class A Preferred Stock have been automatically converted as of the date of such transfer; provided, however, that the pledge of Class A Preferred

Stock as collateral under any credit agreement for the financing or refinancing of the initial purchase of the Class A Preferred Stock by the Plan shall not constitute a transfer for purposes of this Section 1. Certificates representing shares of Class A Preferred Stock shall be legended to reflect such restrictions on transfer. Notwithstanding the foregoing provisions of this Section 1 (B), shares of Class A Preferred Stock (i) upon allocation to the account of a participant in the Plan, shall be converted into shares of Common Stock pursuant to Section 5 hereof and the shares of Common Stock issued upon such conversion may be transferred by the holder thereof as permitted by law and (ii) shall be redeemable by the Corporation upon the terms and conditions provided by Sections

6. 7 and 8 hereof

Section 2. Dividends and Distributions

(A) Subject to the provisions for adjustment hereinafter set forth, the holders of shares of Class A Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors out of funds available under applicable law and the Certificate of Incorporation, cumulative cash dividends ("Preferred Dividends") in an amount per share equal to \$4.68 per annum and no more, payable (x) monthly in arrears, one-twelfth on the 20th day of each month, commencing on July 20, 1989 and ending on June 20, 1990, and thereafter (y) quarterly in arrears, one-quarter on the 20th day of each March, June, September and December in each year (each such monthly and quarterly date a "Dividend Payment Date"), to holders of record at the start of business on such Dividend Payment Date. In the event that any Dividend Payment Date shall occur on any day other than a "Business Day" (as defined in Section 9(F)(i)).

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the dividend payment due on such Dividend Payment Date shall be paid on the Business Day immediately succeeding such Dividend Payment Date. Preferred Dividends shall begin to accrue on outstanding shares of Class A Preferred Stock from the date of issuance of such shares of Class A Preferred Stock. Preferred Dividends shall accrue on a daily basis whether or not the Corporation shall have earnings or surplus at the time. Preferred Dividends accrued after the date of issuance for any period less than a full monthly or quarterly period, as the case may be, between Dividend Payment Dates shall be computed on the basis of a 360-day year consisting of twelve 30-day months and such a proportional dividend shall accrue for the period from the date of issuance until the end of the dividend payment period in which such issuance occurs. Accumulated but unpaid Preferred Dividends shall accumulate as of the Dividend Payment Date on which they first become payable, but no interest shall accrue on accumulated but unpaid Preferred Dividends.

(B) So long as any Class A Preferred Stock shall be outstanding, no dividend shall be declared or paid or set apart for payment on any other class of stock ranking on a parity with the Class A Preferred Stock as to dividends ("Parity Stock"), unless there shall also be or have been declared and paid or set apart for payment on the Class A Preferred Stock dividends ratably in proportion to the respective amounts of dividends (a) accumulated and unpaid through all dividend payment periods for the Class A Preferred Stock ending on or before the dividend payment date of such Parity Stock and (b) accumulated and unpaid on such Parity Stock through the dividend payment period on such Farity Stock ent preceding such dividend payment date. So long as any Class A Preferred Stock shall be outstanding, in the event that full cumulative dividends on the Class A Preferred Stock have not been declared and paid or set apart for payment for all prior dividend payment periods, the Corporation shall not declare or pay or set apart for payment any dividends or make any other distributions on, or make any payment on account of the purchase, redemption or other retirement of, any other class of stock or series thereof of the Corporation ranking as to dividends junior to the Class A Preferred Stock ("Junior Stock") until full cumulative and unpaid dividends on the Class A Preferred Stock shall have been paid or declared and set apart for payment; provided, however, that the foregoing shall not apply to (i) any dividend payable solely in any shares of any Junior Stock, or (ii) the acquisition of shares of any Junior Stock either (x) pursuant to any employment, severance or consulting agreement) of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted or (v) in exchange solely for shares of any more dividended on the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted or (v) in exchange solely for shares of any

Section 3. Voting Rights. The holders of shares of Class A Preferred Stock shall have the following voting rights:

(A) The holders of Class A Preferred Stock shall be entitled to vote on all matters submitted to a vote of the holders of Common Stock of the Corporation, voting together as one class with the holders of Common Stock and any other class or series of preferred stock so voting as one class. Each share of the Class A Preferred Stock shall entitle the holder thereof to a number of votes equal to the number of shares of Common Stock into which such share of Class A Preferred Stock could be converted pursuant to the first sentence of Section 5(A) hereof on the record date for determining the shareholders entitled to vote, rounded to the nearest one-tenth of a vote; it being understood that whenever the "Conversion Ratio" (as defined in Section 5 hereof) is adjusted pursuant to Section 8 hereof, the voting rights of the Class A Preferred Stock shall also be similarly adjusted.

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other Junior Stock.

(B) Except as otherwise required by law, holders of Class A Preferred Stock shall have no special voting rights and their consent shall not be required (except to the extent they are entitled to vote with holders of Common Stock or any other class or series of preferred stock) for the taking of any corporate action.

Section 4. Liquidation, Dissolution or Winding-Up.

(A) Upon any voluntary or involuntary liquidation, dissolution or winding-up of the Corporation, the holders of Class A Preferred Stock shall be entitled to receive out of assets of the Corporation which remain after satisfaction in full of all valid claims of creditors of the Corporation and which are available for payment to shareholders, and subject to the rights of the holders of any class of stock of the Corporation ranking senior to or on a parity with the Class A Preferred Stock in respect of distributions upon liquidation, dissolution or winding-up of the Corporation, before any amount shall be paid or distributed among the holders of Common Stock or any other class of stock ranking junior to the Class A Preferred Stock in respect of

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distributions upon liquidation, dissolution or winding-up of the Corporation, liquidating distributions in an aggregate amount of \$61.50 per share of Class A Preferred Stock plus an amount equal to all accrued and unpaid dividends thereon to the date fixed for distribution, and no more. If upon any liquidation, dissolution or winding-up of the Corporation, the amounts payable with respect to the Class A Preferred Stock and any other class of stock ranking as to any such distribution on a parity with the Class A Preferred Stock are not paid in full, the holders of the Class A Preferred Stock and such other class of stock shall share ratably in any distribution of assets in proportion to the full respective preferential amounts to which they are entitled. After payment of the full amount to which they are entitled as provided by the foregoing provisions of this Section 4(A), the holders of shares of Class A Preferred Stock shall not be entitled to any further right or claim to any of the remaining assets of the Corporation.

(B) Neither the merger, consolidation or combination of the Corporation with or into any other corporation, nor the sale, lease, transfer or other exchange of all or any portion of the assets of the Corporation (or any purchase or redemption of some or all of the shares of any class or series of stock of the Corporation), shall be deemed to be a dissolution, liquidation or winding-up of the affairs of the Corporation for purposes of this Section 4, but the bolders of Class A Preferred Stock shall nevertheless be entitled in the event of any such transaction to the rights provided by Section 8 hereof.

(C) Written notice of any voluntary or involuntary liquidation, dissolution or winding-up of the Corporation, stating the payment date or dates when, and the place or places where, the amounts distributable to holders of Class A Preferred Stock and any other class or series of preferred stock in such circumstances shall be payable, and stating that, except in the case of Class A Preferred Stock represented by uncertificated shares, such payment will be made only after the surrender (or submission for notation of any partial payment) of such holders certificates representing shares of Class A Preferred Stock, shall be given by first class mail, postage prepaid, mailed not less than twenty (20) days prior to any payment date stated therein, to the holders of Class A Preferred Stock, at the address shown on the books of the Corporation or any transfer agent for the Class A Preferred Stock.

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Section 5. Conversion into Common Stock,

(A) A holder of shares of Class A Preferred Stock shall be entitled at any time, but not later than the close of business on the Redemption Date (as hereinafter defined) of such shares pursuant to Section 6, 7 or 8 hereof, to cause any or all of such shares to be converted into a number of shares of Common Stock for each share of Class A Preferred Stock which initially shall be now and which shall be adjusted as hereinafter provided (and, as so adjusted, is hereinafter sometimes referred to as the "Conversion Ratio"). In addition to the foregoing and subject to Section 5(8) hereof, a holder of shares of Class A Preferred Stock upon allocation of such shares to the account of a participant in the Plan shall be required to convert each such share of Class A Preferred Stock by the greater of (i) that number of shares of Common Stock which shall be the quotient obtained by dividing the Stated Value of each share of Class A Preferred Stock by the greater of (x) \$15 divided by the Conversion Ratio or (y) the average of the high and low sales prices for a share of Common Stock on the trading day next preceding the Conversion Date (as hereinafter defined) on which one or more sales of shares of Common Stock occur, all as reported on the Composite Tape (as hereinafter defined), or (ii) that number of shares of Common Stock equal to the Conversion Ratio. The Corporation's determination in good faith in respect of the number of shares to be issued upon any and all conversions pursuant to the preceding sentence shall be conclusive.

(B) Any holder of shares of Class A Preferred Stock desiring or required to convert such shares into shares of Common Stock shall surrender the certificate or certificates representing the shares of Class A Preferred Stock being converted, duly assigned or endorsed for transfer to the Corporation (or accompanied by duly executed stock powers relating thereto) in case of a request for registration in a name other than that of such holder, at the offices of the Corporation or the transfer agent for the Common Stock accompanied by written notice of conversion. Such notice of conversion shall specify (i) the number of shares of Class A Preferred Stock to be converted, and the name or names in which such holder wishes the certificate or certificates for Common Stock and for any shares of Class A Preferred Stock not to be so converted to be issued (or the name or names in which ownership of such shares is to be registered in the event that they are to be uncertificated), (ii) the address or addresses to which such holder wishes delivery to be made of such new certificates to be issued upon such conversion, and (iii) whether the conversion is being effected pursuant to the second sentence of Section 5(A) hereof.

(C) A conversion of shares of Class A Preferred Stock into shares of Common Stock pursuant to Section 5(A) shall be effective immediately before the close of business on the day of the later of (i) the surrender to the Corporation of the certificate or certificates for the shares of Class A Preferred Stock to be converted, duly assigned or endorsed for transfer to the Corporation (or accompanied by duly executed stock powers relating thereto) in case of a request for registration in a name other than that of such holder and (ii) the giving of the notice of conversion as provided herein (the "Conversion Date"). On and after such Conversion Date, the person or persons entitled to receive the Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock.

(D) Promptly after the Conversion Date for shares of Class & Preferred Stock to be converted, the Corporation or the transfer agent for the Common Stock shall issue and send by hand delivery (with receipt to be acknowledged) or by first class mail, postage prepaid, to the holder of such shares or to such holder's designee, at the address designated by such holder, a

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certificate or certificates for the number of shares of Common Stock to which such holder shall be entitled upon conversion. In the event that there shall

have been surrendered a certificate or certificates representing shares of Class A Preferred Stock only part of which are to be converted, the Corporation or the transfer agent for the Common Stock shall issue and deliver to such holder or such holder's designee a new certificate or certificates representing the number of shares of Class A Preferred Stock which shall not have been converted.

(E) The Corporation shall not be obligated to deliver to holders of Class A Preferred Stock any fractional share or shares of Common Stock issuable upon any conversion of such shares of Class A Preferred Stock, but in lieu thereof may make a cash payment in respect thereof in any manner permitted by law. The determination in good faith by the Corporation of the amount of any such cash payments shall be conclusive.

(F) The Corporation shall at all times reserve and keep available out of its authorized and unissued and/or treasury Common Stock solely for issuance upon the conversion of shares of Class A Preferred Stock as herein provided, free from any preemptive rights, the maximum number of shares of Common Stock as shall from time to time be issuable upon the conversion of all shares of Class A Greferred Stock then outstanding.

Section 6. Redemption at the Option of the Corporation.

(A) The Class A Preferred Stock shall be redeemable, in whole or in part, at the option of the Corporation at any time at the Stated Value, plus an amount equal to all accrued and unpaid dividends thereon to the date fixed for redemption (the close of business on such date being referred to as the "Kedemption Date"), provided that such redemption may be made on or after

December 20, 1990 and prior to July 20, 1995 only if (i) the Corporation shall have requested that the trustee of the Plan repay the indebtedness incurred by such trustee to purchase the shares of Class A Preferred Stock and (ii) either (x) Section 404(k) of the Code (as hereinafter defined) is repealed or amended or the Internal Revenue Service or the Treasury Department promulgates a Revenue Ruling or Regulation or a federal Court of Appeals issues a decision involving the Corporation, at any time on or after December 20, 1990 and prior to July 20, 1995 with the effect that less than 100% of the dividends payable on the shares of any capital stock of the Corporation including, without limitation, Class A Preferred Stock or Common Stock held in the Plan is deductible by the Corporation, when paid to participants in the Plan or their beneficiaries or used to repay indebtedness as described in Section 404(k) of the Code, from its gross income for purposes of determining its liability for the federal income tax imposed by Section 11 of the Code or (y) the Code is amended at any time on or after December 20, 1990 and prior to July 20, 1995 (other than to change the rate of any existing tax imposed by the Code) or the Internal Revenue Service or the Treasury Department promulgates a Revenue Ruling or Regulation or a federal Court of Appeals issues a decision involving the Corporation, with the effect that the Corporation's liability for the alternative minimum tax imposed by Section 55 of the Code, the general federal income tax imposed by Section 11 of the Code or any other tax hereafter imposed by the Code is increased solely by reason of its claiming a deduction in respect of dividends paid on the shares of any capital stock of the Corporation in respect of dividends paid on the shares of any capital stock of the Corporation in respect of five a manner consistent with Section 404(k) of the Code. Payment of the redemption price shall be made by the Corporation in cash or shares of Common Stock or a combination th

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deemed to be outstanding and all rights in respect of such shares of the Corporation shall cease, except the right to receive the redemption price. No interest shall accrue at the redemption price after the Redemption Date. If less than all of the outstanding shares of Class A Preferred Stock are to be redeemed, the Corporation shall either redeem a portion of the shares of each holder determined pro rata based on the number of shares held by each holder or shall select the shares to be redeemed by lot or as may be otherwise determined by the Board of Directors of the Corporation.

(B) Unless otherwise required by law, notice of redemption pursuant to paragraph (A) of this Section 6 will be sent to the holders of class A Preferred Stock at the address shown on the books of the Corporation or any transfer agent for the Class A Preferred Stock by first class mail, postage prepaid, mailed not less than thirty (30) days nor more than sixty (60) days prior to the Redemption Date. Such Class A Preferred Stock shall continue to be entitled to the conversion rights provided in Section 5 hereof through such Redemption Date. Each such notice shall state: (i) the Redemption Date; (ii) the total number of shares of the Class A Preferred Stock to be redeemed and, if fewer than all the shares held by such holder are to be redeemed, the number of such shares to be redeemed from such holder, (iii) the redemption price and the intended form of payment; (iv) the place or places where certificates for such shares are to be surrendered for payment of the redemption price; (v) that dividends on the shares to be redeemed will cease to accrue on such Redemption Date; and (vi) a summary of the conversion rights of the shares to be redeemed, the period within which conversion rights may be exercised, and the Conversion Ratio in effect at the time. Upon surrender of the certificate for any shares so called for redemption and not previously converted (or upon giving the notice of redemption in the case of uncertificated shares), but not earlier than the Redemption Date, the Corporation shall pay to the holder of such shares or its designee the redemption price set forth pursuant to this Section 6.

(C) The Corporation, at its option, may make payment of the redemption price required upon redemption of shares of Class A Preferred Stock pursuant to Section 6 or 7 hereof in cash or in shares of Common Stock or in a combination of such shares and cash, any such shares of Common Stock to be valued for such purpose at their Pair Market Value (as defined in Section 9(F)(iii)) on the Redemption Date. Any shares of Common Stock so issued or delivered (or issued or delivered pursuant to Section 7) shall be deemed to have been issued or delivered to the holder of the Class A Preferred Stock as of the Redemption Date and such holder shall be deemed to have become the record holder thereof as of the Redemption Date.

Section 7. Other Redemption Rights.

Shares of Class A Preferred Stock shall be redeemed by the Corporation for cash or, if the Corporation so elects, in shares of Common Stock, or a combination of such shares and cash (any such shares of Common Stock to be valued for such purpose in accordance with Section 6(C)), at a redemption price equal to the Stated Value plus accrued and unpaid dividends thereon to the date fixed for redemption, at the option of the holder, at any time and from time to time upon notice to the Corporation given not less than five (5) Business Days prior to the Redemption Date fixed by the holder in such notice (1) in the event that the Plan is determined by the Internal Revenue Service not to be qualified within the meaning of Sections 401(a) and 4975(e) (7) of the Internal Revenue Code of 1986, as amended from time to time (the *Code*) or (ii) in the event that the Plan is terminated in accordance with its terms.

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Section 8. Consolidation, Combination, Merger, Etc.

(A) In the event that the Corporation shall consummate any consolidation, combination, merger or substantially similar transaction, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged solely for or changed, reclassified or converted solely into stock of any successor or resulting corporation (including the Corporation) that constitutes "qualifying employer securities" with respect to a holder of Class A Preferred Stock within the meaning of Section 409(1) of the Code and Section 407(d) (5) of the Employee Retirement Income Security Act of 1974, as amended, or any successor provisions of law, and, if applicable, for a cash payment in lieu of fractional shares, if any, the shares of Class A Preferred Stock of such holder shall in connection therewith be exchanged for or converted into preferred stock of such successor or resulting corporation, having in respect of such corporation insofar as possible the same powers, preferences and relative, participating, optional or other special rights (including the redemption rights provided by Sections 6, 7 and 8 hereof), and the qualifications, limitations or restrictions thereon, that the Class A Preferred Stock had immediately prior to such transaction, except that after such transaction each share of the Class A Preferred Stock shall be convertible, otherwise on the terms and conditions provided by Section 5 hereof, into the number and kind of qualifying employer securities so receivable by a holder of the number of shares of Common Stock into which such shares of Class A Preferred Stock could have been converted pursuant to the first sentence of Section 5 (A) hereof immediately prior to such transaction, provided, however, that if by virtue of the structure of such

transaction, a holder of Common Stock is required to make an election with respect to the nature and kind of consideration to be received in such transaction, such holder of shares of Class A Preferred Stock shall be entitled to make an equivalent election as to the nature and kind of consideration it shall receive, and if such election cannot practicably be made by the holders of the Class A Preferred Stock, then the shares of Class A Preferred Stock shall, by virtue of such transaction and on the same terms as apply to the holders of Common Stock, be convertible into or exchangeable for the aggregate amount of qualifying employer securities (payable in like kind and proportion) receivable by a holder of the number of shares of Common Stock into which such shares of Class A Preferred Stock could have been converted immediately prior to such transaction if such holder of Common Stock failed to exercise any rights of election to receive any kind or amount of qualifying employer securities receivable upon such transaction (provided that, if the kind or amount of

qualifying employer securities receivable upon such transaction is not the same for each non-electing share, then the kind and amount of qualifying employer securities receivable upon such transaction for each such non-electing share shall be the kind and amount so receivable per share by a plurality of the non-electing shares). The conversion rights of the class of preferred stock of such successor or resulting corporation for which the Class A Preferred Stock is exchanged or into which it is converted, shall successively be subject to adjustments pursuant to Section 9 hereof after any such transactions as nearly equivalent as practicable to the adjustments provided for by such Section prior to such transaction. The Corporation shall not consummate any such merger, consolidation or similar transaction unless the successor or resulting corporation shall have agreed to recognize and honor the rights of the holders of Class A Preferred Stock set forth in this Section 8(A).

(B) In the event that the Corporation shall consummate any consolidation, combination, merger or substantially similar transaction, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged for or changed, reclassified or converted into other stock or securities or cash or any other property, or any combination thereof,

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other than solely qualifying employer securities (as referred to in Section 8(A)) and cash payments, if applicable, in lieu of fractional shares, outstanding shares of Class A Preferred Stock shall, without any action on the part of the Corporation or any holder thereof (but subject to Section 8(C)), be deemed to have been converted pursuant to the first sentence of Section 5(A) hereof immediately prior to the consummation of such merger, consolidation, combination or similar business combination transaction into the number of shares of Common Stock into which such shares of Class A Preferred Stock could have been converted pursuant to the first sentence of Section 5(A) hereof at such time so that each share of Class A Preferred Stock shall, by virtue of such transaction and on the same terms as apply to the holders of Common Stock, be converted into or exchanged for the aggregate amount of stock, securities, cash or other property (payable in like kind and proportion) receivable by a holder of the number of shares of Common Stock into which such share of Class A Preferred Stock could have been converted pursuant to the first sentence of Section 5(A) hereof immediately prior to such transaction, provided, however,

that if by virtue of the structure of such transaction, a holder of Common Stock is required to make an election with respect to the nature and kind of consideration to be received in such transaction, the holder of Class A preferred Stock shall be entitled to make an equivalent election as to the kind of consideration at shall receive, and if such election cannot practicably be

made by the holders of the Class A Freferred Stock, then the shares of Class A Freferred Stock shall, by virtue of such transaction and on the same terms as apply to the holders of Common Stock, be converted into or exchanged for the aggregate amount of stock, securities, cash or other property (payable in like kind and proportion) receivable by a holder of the number of shares of Common Stock into which such shares of Class A Preferred Stock could have been converted immediately prior to such transaction if such holder of common Stock failed to exercise any rights of election as to the kind or amount of stock, securities, cash or other property receivable upon such transaction (provided

that, if the kind or amount of stock, securities, cash or other property

receivable upon such transaction is not the same for each non-electing share, then the kind and amount of stock, securities, cash or other property receivable upon such transaction for each such non-electing share shall be the kind and amount so receivable per share by a plurality of the non-electing shares).

(C) In the event the Corporation shall enter into any agreement providing for any consolidation, combination, merger or substantially similar transaction described in Section 8(B), then the Corporation shall as soon as practicable thereafter (and in any event at least twenty (20) Business Days before consummation of such transaction) give notice of such agreement and the material terms thereof to each holder of Class A Preferred Stock and each holder shall have the right to elect, by written notice to the Corporation, to receive, upon consummation of such transaction (if and when such transaction is consummated), from the Corporation or the successor of the Corporation, in redemption and retirement of such Class A Preferred Stock, a cash payment equal to the amount payable in respect of shares of Class A Preferred Stock upon redemption pursuant to Section 6(A) hereof as if the date of the consummation of such transaction was the Redemption Date. No such notice of redemption shall be effective unless given to the Corporation prior to the close of business on the second Business Day prior to consummation of such transaction, unless the Corporation or the successor of the Corporation shall waive such prior notice, but any notice of redemption so given prior to such time may be withdrawn by notice of withdrawal given to the Corporation prior to the close of business on the second Business Day prior to consummation of such transaction.

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Section 9. Anti-dilution Adjustments.

(A) In the event the Corporation shall, at any time or from time to time while any of the shares of the Class A Preferred Stock are outstanding, (i) pay a dividend or make a distribution in respect of the Common Stock in shares of Common Stock, (ii) subdivide the outstanding shares of Common Stock or (iii) combine the outstanding shares of Common Stock not a smaller number of shares, in each case whether by reclassification of shares, recapitalization of the Corporation (including a recapitalization effected by a merger or consolidation to which Section 8 hereof does not apply) or otherwise, the Conversion Ratio in effect immediately prior to such action shall be adjusted by multiplying such Conversion Ratio by a fraction, the numerator of which is the number of shares of Common Stock outstanding immediately after such event, and the denominator of which is the number of shares of Common Stock outstanding immediately before such event. An adjustment made pursuant to this Section 9(A) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of shareholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(B) In the event the Corporation shall, at any time or from time to time while any shares of Class A Preferred Stock are outstanding, issue rights, options or warrants to all holders of its outstanding Common Stock, without any charge to such holders, entitling them (for a period expiring within forty-tive (45) days after the record date mentioned below) to subscribe for or purchase shares of Common Stock at a price per share which is more than 2% lower at the record date mentioned below than the then Current Market Price per share of Common Stock, the Conversion Ratio in effect immediately prior to such action shall, subject to paragraphs (D) and (E) of this Section 9, be adjusted by multiplying such Conversion Ratio by a fraction (i) the numerator of which shall be the number of shares of Common Stock outstanding on the date of issuance of such rights, options or warrants plus the number of additional shares of Common Stock issued upon exercise thereof, and (ii) the denominator of which shall be the number of shares of Common Stock outstanding on the date of issuance of such rights, options or warrants plus the number of shares which the aggregate offering price of the total number of shares of Common Stock so issued would purchase at the then Current Market Price per share of Common Stock. Such adjustment shall be made whenever such rights, options or warrants have expired, and shall become effective retroactively immediately after the record date for the determination of shareholders entitled to receive such rights, options or warrants on the basis of the number of rights, options or warrants actually exercised.

(C) In the event the Corporation shall, at any time or from time to time while any of the shares of Class A Preferred Stock are outstanding, make an Extraordinary Distribution (as defined in Section 9(F)(ii)) in respect of the Common Stock, whether by dividend, distribution, reclassification of shares or recapitalization of the Corporation (other than a recapitalization or reclassification effected by a merger, combination or consolidation to which Section 8 hereof applies), the Conversion Ratio in effect immediately prior to such Extraordinary Distribution shall, subject to paragraphs (D) and (E) of this Section 9, be adjusted by multiplying such Conversion Ratio by a fraction, the numerator of which shall be the product of (1) the number of shares of Common Stock outstanding immediately before such Extraordinary Distribution and (ii) the Fair Market Value of a share of Common Stock on the Valuation Date (as defined in Section 9(F)(vi)) with respect to an Extraordinary Distribution, and

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denominator of which shall be (i) the product of (x) the number of shares of Common Stock outstanding immediately before such Extraordinary Distribution and (y) the Fair Market Value of a share of Common Stock on the Valuation Date with

respect to an Extraordinary Distribution, minus (ii) the Fair Market Value of

the Extraordinary Distribution on the Valuation Date. The Corporation shall send each holder of Class & Preferred Stock notice of its intent to make any Extraordinary Distribution at the same time as, or as soon as practicable after, such intent is first communicated (including by announcement of a record date in accordance with the rules of the principal stock exchange on which the Common Stock is listed or admitted to trading) to holders of Common Stock. Such notice shall indicate the intended record date and the amount and nature of such dividend or distribution, and the Conversion Ratio in effect at such time.

- (D) Notwithstanding any other provisions of this Section 9, the Corporation shall not be required to make any adjustment of the Conversion Ratio unless such adjustment would require an increase or decrease of at least one percent (1%) in the Conversion Ratio. Any lesser adjustment shall be carried forward and shall be made no later than the time of, and together with, the next subsequent adjustment which, together with any adjustment or adjustments so carried forward, shall amount to an increase or decrease of at least one percent (1%) in the Conversion Ratio.
- (E) The Corporation shall be entitled to make such additional adjustments in the Conversion Ratio, in addition to those required by the foregoing provisions of this Section 9, as shall be necessary in order that any dividend or distribution in shares of capital stock of the Corporation, subdivision, reclassification or combination of shares of stock of the Corporation or any recapitalization of the Corporation shall not be taxable to holders of the Common Stock.
- (F) For purposes of this Exhibit A, the following definitions shall apply:
 - (i) "Business Day" shall mean each day that is not a Saturday, Sunday or a day which state or federally chartered banking institutions in New York are required or authorized to be closed.
 - (ii) "Extraordinary Distribution" shall mean any dividend or other distribution (effected while any of the shares of Class A Preferred Stock are outstanding) of (x) cash to the extent that such dividend or distribution when added to the amount of all cash dividends and distribution spaid during the preceding period of twelve (12) calendar months exceeds fifteen percent (15%) of the aggregate Fair Market Value of all shares of Common Stock outstanding on the declaration date for such Extraordinary Distribution and/or (y) any shares of capital stock of the Corporation (other than shares of Common Stock), other securities of the Corporation, evidences of indebtedness of the Corporation or any other property (including shares of any subsidiary of the Corporation), or any combination thereof, but excluding rights, options or warrants to which Section 9(8) refers (without regard to the subscription or purchase price provided for therein).
 - (iii) "Fair Market Value" shall mean, as to shares of Common Stock or any other class of publicly traded capital stock or securities of the Corporation or any other issuer which are publicly traded, the average of the Current Market Prices of such shares or securities for each day of the Adjustment Period. The "Fair Market Value" of any security which is not publicly traded or of any other property shall mean the fair

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value thereof as determined by an independent investment banking or appraisal firm experienced in the valuation of such securities or property, which firm shall be selected in good faith by the Board of Directors of the Corporation or a committee thereof, or, if no such investment banking or appraisal firm is in the good faith judgment of the Board of Directors or such committee available to make such determination, as determined in good faith by the Board of Directors of the Corporation or such committee.

(iv) "Current Market Price" of publicly traded shares of Common Stock or any other class of capital stock or other security of the Corporation or any other issuer shall mean (1) the last reported sales price, regular way, or, if no sale takes place on such day, the average of the reported closing bid and asked prices, regular way, in either case as reported on the Composite Tape for New York Stock Exchange transactions (the "Composite Tape") or, (II) if such security is not listed or admitted to trading on the New York Stock Exchange (the "NYSE"), on the principal national securities exchange on which such security is listed or admitted to trading or, (III) if not listed or admitted to trading or, any national securities exchange, on the National Market System of the National Association of Securities Dealers, Inc. Automated Quotation System ("NASDAQ National Market System, the average of the closing bid and asked prices on each such day in the over-the-counter market as reported by NASDAQ or, (V) if bid and asked prices for such security on each such day shall not have been reported through NASDAQ, the average of the bid and asked prices for such day as furnished by any NYSE member firm regularly making a market in such security selected for such purposes by the Board of Directors of the Corporation or a committee thereof, in each case, on each trading day during the Adjustment Period; provided, however, in determining

the Current Market Price, the value (as reasonably determined by the Board of Directors of the Corporation or a committee thereof) of any "due-bill" or similar instrument which is then associated with a share of Common Stock or any other class of capital stock or other security, shall be deducted.

- (v) "Adjustment Period" shall mean the period of five (S) consecutive trading days preceding, and including, the date as of which the Fair Market Value of a security is to be determined.
- (vi) "Valuation Date" with respect to an Extraordinary Distribution shall mean the date that is five (5) Business Days prior to the record date for such Extraordinary Distribution.
- (vii) "Plan' shall mean collectively the Corporation's Thrift and ESOF plans and its Thrift and ESOF Trust.

(G) Whenever an adjustment to the Conversion Ratio and the related voting rights of the Class A Preferred Stock is required pursuant hereto, the Corporation shall forthwith deliver to the transfer agent(s) for the Common Stock and the Class A Preferred Stock and file with the Secretary of the Corporation, a statement signed by an officer of the Corporation stating the adjusted Conversion Ratio determined as provided herein, and the voting rights (as appropriately adjusted), of the Class A Preferred Stock. Such statement shall set forth in reasonable detail such facts as shall be necessary to show the reason and the manner of computing such adjustment including any determination of Fair Market Value involved in such

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computation. Promptly after each adjustment to the Conversion Ratio and the related voting rights of the Class A Preferred Stock, the Corporation shall mail a notice thereof and of the then prevailing Conversion Ratio to each holder of Class A Preferred Stock,

Section 10. Ranking, Cancellation of Shares.

(A) The Class A Preferred Stock shall rank senior to the Common Stock as to the payment of dividends and senior to the Common Stock as to the distribution of assets on liquidation, dissolution and winding-up of the Corporation, and, unless otherwise provided in the Certificate of Incorporation, as the same may be amended, the Class A Preferred Stock shall rank on a parity with all other classes or series of the Corporation's preferred stock, as to payment of dividends and the distribution of assets on liquidation, dissolution or winding-up.

(8) Any shares of Class A Preferred Stock acquired by the Corporation by reason of the conversion or redemption of such shares as provided hereby, or otherwise so acquired, shall be cancelled as shares of Class A Preferred Stock and restored to the status of authorized but unissued shares of preferred stock of the Corporation, undesignated as to classes or series, and may thereafter be reissued as part of a new class or series of such preferred stock as permitted by law.

Section 11 Miscellaneous.

(A) All notices referred to herein shall be in writing, and all notices hereunder shall be deemed to have been given upon the earlier of receipt thereof or three (3) Business Days after the mailing thereof if sent by registered mail (unless first class mail shall be specifically permitted for such notice under the terms of this Exhibit A) with postage prepaid, addressed: (i) if to the Corporation, to its office at 5959 Las Colinas Boulevard, Irving, TX 75039 (Attention: Treasurer) or to the transfer agent (if any) for the Class A Preferred Stock or (ii) if to any holder of the Class A Preferred Stock or the Common Stock, as the case may be, to such holder at the address of such holder as listed in the stock record hooks of the Corporation (which may include the records of any transfer agent for the Class A Preferred Stock or the Common Stock, as the case may be) or (iii) to such other address as the Corporation shall have designated by notice similarly given.

(B) In the event that, at any time as a result of an adjustment made pursuant to Section 8 or 9, the holder of any share of the Class A Preferred Stock upon thereafter surrendering such shares for conversion shall become entitled to receive any shares or other securities of the Corporation other than shares of Common Stock, the Conversion Ratio in respect of such other shares or securities so receivable upon conversion of shares of Class A Preferred Stock shall thereafter be adjusted, and shall be subject to further adjustment from time to time, in a manner and on terms as nearly equivalent as practicable to the provisions with respect to Common Stock contained in Sections 8 or 9, and the provisions of each of the other Sections hereof with respect to the Common Stock shall apply on like or similar terms to any such other shares or securities. Any determination in good faith by the Corporation as to any adjustment of the Conversion Ratio pursuant to this Section 11 (B) shall be

(C) The Corporation shall pay any and all issuance, stock transfer and documentary stamp taxes that may be payable in respect of any issuance or delivery of shares of Class A Preferred Stock or Common Stock or other securities issued upon conversion of Class A

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Preferred Stock pursuant hereto or certificates representing such shares or securities. The Corporation shall not, however, be required to pay any such tax which may be payable in respect of any transfer involved in the issuance or delivery of shares of Common Stock or other securities in a name other then that in which the shares of Class A Preferred Stock with respect to which such shares or other securities are issued or delivered were registered, or in respect of any payment to any person with respect to any such shares or securities other than a payment to the registered holder thereof, and shall not be required to make any such issuance, delivery or payment unless and until the person otherwise entitled to such issuance, delivery or payment has paid to the Corporation the amount of any such tax for issuance, transfer or documentary stamp taxes or has established, to the satisfaction of the Corporation, that such tax has been paid or is not payable.

(D) In the event that a holder of shares of Class A Preferred Stock shall not by written notice designate the name in which (i) shares of Common Stock or (ii) any other securities in accordance with this Exhibit A, to be issued upon conversion of such shares should be registered or to whom payment upon redemption of shares of Class A Preferred Stock should be made or the address to which the certificate or certificates representing such shares, or such payment, should be sent, the Corporation shall be entitled to register such shares, and make such payment, in the name of the holder of such Class A Preferred Stock as shown on the records of the Corporation and to send the certificate or certificates representing such shares, or such payment, to the address of such holder shown on the records of the Corporation.

(E) Unless otherwise provided in the Certificate of Incorporation, as the same may be amended, all payments of (x) dividends upon the shares of any class of stock and upon any other class of stock ranking on a parity with such first class of stock with respect to such dividends shall be made pro rata, so that amounts paid per share on such first class of stock and such other class of stock shall in all cases bear to each other the same ratio that the required dividends then payable per share on the shares of such first class of stock and such other class of stock bear to each other and (y) distributions on voluntary or involuntary dissolution, liquidation or winding-up or otherwise made upon the shares of any class of stock and upon any other class of stock ranking on a parity with such first class of stock with respect to such distributions shall be made pro rata, so that amounts paid per share on such first class of stock and such other class of stock shall in all cases bear to each other the same ratio that the required distributions then payable per share on the shares of such first class of stock and such other class of stock bear to each other.

(F) The Corporation may appoint, and from time to time discharge and change, a transfer agent for the Class A Preferred Stock. Upon any such appointment or discharge of a transfer agent, the Corporation shall send notice thereof by first class mail, postage prepaid, to each holder of record of Class A Preferred Stock. So long as there is a transfer agent for a class of stock, a holder thereof shall give any notices to the Corporation required hereunder to the transfer agent at the address of the transfer agent last given by the Corporation.

(G) If the Corporation and the holder so agree, any shares of Class A Preferred Stock or any shares of Common Stock into which the shares of Class A Preferred Stock shall be converted, may be uncertificated shares, provided that

the names of the holders of all uncertificated shares and the number of such shares held by each holder shall be registered at the offices of the Corporation or the transfer agent for such shares. In the event that any shares shall

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be uncertificated, all references herein to the surrender or issuance of stock certificates shall have no application to such uncertificated shares.

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PART II

Class B Preferred Stock

1. Designation and Issuance

(A) The shares of such class shall be designated CLASS B PREFERRED STOCK (hereinafter referred to as "Class B Preferred Stock") and the number of shares constituting such class shall be 165,800. Such number of shares may be increased or decreased by resolution of the Board of Directors, but no such decrease shall reduce the number of shares of Class B Preferred Stock to a number less than that of the shares then outstanding plus the number of shares issuable upon exercise of any rights, options or warrants or upon conversion of outstanding securities issued by the Corporation. All shares of Class B Preferred Stock redeemed or purchased by the Corporation shall be retired and shall be restored to the status of authorized but unissued shares of preferred stock without designation.

(B) Shares of Class B Preferred Stock shall be issued only to a trustee or trustees acting on behalf of an employee stock ownership trust or plan or other employee benefit plan ("Plan") of Mobil Corporation or Mobil Oil Corporation (collectively, "Mobil Oil"). In the event of any sale, transfer or other disposition (hereinafter a "transfer") of shares of Class B Preferred Stock to any person other than (x) any trustee or trustees of the Plan and (y) any pledgee of such shares acquiring such shares as security for any loan or loans made to the Plan or to any trustee or trustees acting on behalf of the Plan, the shares of Class B Preferred Stock so transferred, upon such transfer and without any further action by the Corporation or the holder shall be automatically converted into shares of the Common Stock (as defined in Section 10) at the Conversion Price (as hereinafter defined) and on the terms otherwise provided for the conversion of shares of Class B Preferred Stock into shares of Common Stock pursuant to Section 5 hereof and no such transferee shall have any of the voting powers, preferences and relative, participating, optional or special rights ascribed to shares of Class B Preferred Stock hereunder but, rather, only the powers and rights pertaining to the Common Stock into Which such shares of Class B Preferred Stock shall be so converted, provided, however, that in the event of a foreclosure or other realization upon shares of Class B Preferred Stock pledged as security for any loan or loans made to the Plan or to the trustee or the trustees acting on behalf of the Plan, the pledged shares so foreclosed or otherwise realized upon shall (subject to the holder's right of redemption set forth in Section 7(B) hereof) be automatically converted into shares of Common Stock at the Conversion Price and on the terms otherwise provided for conversions of shares of Class B Preferred Stock into shares of Common Stock pursuant to Section 5 hereof. In the event of such a conversion, such transfere shall be treated fo

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2. Dividends and Distributions.

(A) (1) Subject to the provisions for adjustment hereinafter set forth, the holders of shares of Class B Preferred Stock shall be entitled to receive. when and as declared by the Board of Directors out of funds legally available therefor, cash dividends ("Regular Preferred Dividends") in an amount per share initially equal to \$300 per share per annum, subject to adjustment from time to time as hereinafter provided, and no more, except as provided in Section 2(A)(2) (Such amount, as adjusted from time to time, being hereinafter referred to as the "Regular Preferred Dividend Rate"), payable semiannually in arrears, one-half on the last day of February, and one-half on the last day of August of each year (each a "Dividend Payment Date") to holders of record at the start of business on such Dividend Payment Date. The first dividend payable on each share of Class B Preferred Stock shall accrue from the date of original issuance thereof, except that the first dividend payable on shares of Class B Preferred Stock issued on conversion of Mobil Corporation Series B ESOP Convertible Preferred Stock ("Mobil Series B Stock") shall accrue and be cumulative from the last dividend payment date of the Mobil Series B Stock and shall include any arrearage on the Mobil Series B Stock. Regular Preferred Dividends shall accrue on a daily basis, based on the Regular Preferred Dividend Rate in effect on such date, whether or not the Corporation shall have earnings or surplus at the time, computed on the basis of a 160-day year of 10-day months in case of any period less than a full semiannual period. Accrued but unpaid Regular Preferred Dividends, shall cumulate as of the Dividend Payment Date on which they first become payable, but no interest shall accrue on accumulated but unpaid Regular Preferred Dividends.

- any Dividend Payment Date (each such period of six (6) months preceding any Dividend Payment Date (each such period, a "Dividend Period") the aggregate fair value (as determined by the Board of Directors) of all dividends and other distributions declared per share of Common Stock during such Dividend Period multiplied by the number of sthares of Common Stock into which a share of Class B Preferred Stock was convertible on the appropriate dividend payment date for the Common Stock shall exceed the amount of the Regular Preferred Dividends accrued on a share of Class B Preferred Stock during such Dividend Period, the holders of shares of the Class B Preferred Stock shall be entitled to receive, when and as declared by the Board of Directors out of funds legally available therefor, cash dividends (the "Supplemental Preferred Dividends") in an amount per share (with appropriate adjustments to reflect any stock split or combination of shares or other adjustment provided for in Section 3) equal to the amount of such excess up to but not exceeding (x) the product of twelve and one-half per cent (12.5%) times the average of the Pair Market Values of the number of shares of Common Stock into which a share of Class B Preferred Stock was convertible on the day next preceding the ex-dividend date for each such dividend and the distribution date for each such distribution on the Common Stock into which a share of Class B Preferred Dividends. The calculation of each Supplemental Preferred Dividend shall be subject to adjustment corresponding to the adjustments provided in Section 9 hereof.

 Supplemental Preferred Dividends shall accrue and cumulate as of the close of each relevant Dividend Period, but no interest shall accrue on accumulated but unpaid Supplemental Preferred Dividends and no Supplemental Preferred Dividends shall accrue in respect of any period of less than six months.
- (B) (1) No full dividends shall be declared or paid or set apart for payment on any shares ranking, as to dividends, on a parity with or junior to the Class B Preferred Stock, for any

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period unless full cumulative dividends (which for all purposes of this resolution shall include Regular Preferred Dividends and Supplemental Preferred Dividends) have been or contemporaneously are declared and paid or declared and a sum sufficient for the payment thereof set apart for such payment on the Class B Preferred Stock for all Dividend Payment Dates occurring on or prior to the date of payment of such full dividends. When dividends are not paid in full, as aforesaid, upon the shares of Class B Preferred Stock and any other shares ranking, as to dividends, on a parity with Class B Preferred Stock, all dividends declared upon shares of Class B Preferred Stock shall be declared prorata so that the amount of dividends declared per share on Class B Preferred Stock and such other parity shares shall in all cases bear to each other the same ratio that accumulated dividends per share on the shares of Class B Preferred Stock and such other parity shares bear to each other. Except as otherwise provided herein, holders of shares of Class B Preferred Stock shall not be entitled to any dividends, whether payable in cash, property or shares, in excess of full cumulative dividends, as herein provided, on Class B Preferred Stock

- (2) So long as any shares of Class B Preferred Stock are outstanding, no dividend (other than dividends or distributions paid in shares of, or options, warrants or rights to subscribe for or purchase shares of, Common Stock or other shares ranking junior to Class B Preferred Stock as to dividends and upon liquidation and other than as provided in Section 2(B)(1) shall be declared or paid or set aside for payment or other distribution declared or made upon the Common Stock or upon any other shares ranking junior to or on a parity with Class B Preferred Stock as to dividends or upon liquidation, nor shall any Common Stock or any other shares of the Company ranking junior to or on a parity with Class B Preferred Stock as to dividends or upon liquidation be redeemed, purchased or otherwise acquired for any consideration (or any moneys be paid to or made available for a sinking fund for the redemption of any such shares) by the Corporation (except by conversion into or exchange for shares of the Corporation into any interval of the corporation contains, in each case, the full cumulative dividends and upon liquidation) unless, in each case, the full cumulative dividends on all outstanding shares of Class B Preferred Stock shall have been paid.
- (3) Any dividend payment made on shares of Class B Preferred Stock shall first be credited against the earliest accumulated but unpaid dividend due with respect to shares of Class B Preferred Stock.

3 Liquidation Preference

(A) In the event of any liquidation, dissolution or winding-up of the Corporation, whether voluntary or involuntary, before any payment or distribution of the assets of the Corporation (whether capital or surplus) shall be made to or set apart for the holders of any series or classes of stock of the Corporation ranking junior to Class B Preferred Stock upon liquidation, dissolution or winding-up, the holders of Class B Preferred Stock shall be entitled to receive the Liquidation Price (as hereinafter defined) per share in effect at the time of liquidation, dissolution or winding-up plus an amount equal to all dividends accrued (whether or not accumulated) and unpaid thereon to the date of final distribution to such holders, but such holders shall not be entitled to any further payments. The Liquidation Price per share which holders of Class B Preferred Stock shall receive upon liquidation, dissolution or winding-up shall be \$3,887.50, subject to adjustment as hereinafter provided. If, upon any liquidation, dissolution or winding-up of the Corporation, the assets of the Corporation, or proceeds thereof, distributable among the holders of Class B Preferred Stock shall be insufficient to pay in full the preferential

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amount aforesaid and liquidating payments on any other shares ranking as to liquidation, dissolution or winding-up, on a parity with Class B Preferred Stock, then such assets, or the proceeds thereof, shall be distributed among the holders of Class B Preferred Stock and any such other shares ratably in accordance with the respective amounts which would be payable on such shares of Class B Preferred Stock and any such other shares if all amounts payable thereon were paid in full. For the purposes of this Section 3, a consolidation or merger of the Corporation with one or more corporations shall not be deemed to be a liquidation, dissolution or winding-up, voluntary and involuntary.

- (B) Subject to the rights of the holders of shares of any series or class or classes of stock ranking on a parity with or prior to Class B Preferred Stock upon liquidation, dissolution or winding-up, upon any liquidation, dissolution or winding-up of the Corporation, after payment shall have been made in full to the holders of Class B Preferred Stock as provided in this Section 3, but not prior thereto, any other series or class or classes of stock ranking jumior to Class B Preferred Stock upon liquidation, dissolution or winding-up shall, subject to the respective terms and provisions (if any) applying thereto, be entitled to receive any and all assets remaining to be paid or distributed, and the holders of Class B Preferred Stock shall not be entitled to share therein.
 - 4. Ranking and Voting of Shares.
 - (A) Any shares of the Corporation shall be deemed to rank:
- (1) prior to Class B Preferred Stock as to dividends or as to distribution of assets upon liquidation, dissolution or winding-up, if the holders of such class shall be entitled to the receipt of dividends or of amounts distributable upon liquidation, dissolution or winding-up, as the case may be, in preference or priority to the holders of Class B Preferred Stock,
- (2) on a parity with Class B Preferred Stock as to dividends or as to distribution of assets upon liquidation, dissolution or winding-up, whether or not the dividend rates, dividend payment dates, or redemption or liquidation prices per share thereof be different from those of Class B Preferred Stock, if the holders of such class of stock and Class B Preferred Stock shall be entitled to the receipt of dividends or of amounts distributable upon liquidation, dissolution or winding-up, as the case may be, in proportion to their respective dividend or liquidation amounts, as the case may be, without preference or priority one over the other, and
- (3) junior to Class B Preferred Stock as to dividends or as to the distribution of assets upon liquidation, dissolution or winding-up, if such shares shall be Common Stock or if the holders of Class B Preferred Stock shall be entitled to receipt of dividends or of amounts distributable upon liquidation, dissolution or winding-up, as the case may be, in preference or priority to the holders of such shares. Unless otherwise provided in the Restated Certificate of Incorporation of the Corporation, as the same may be amended, including an amendment relating to any subsequent class or series of preferred stock, the Class B Preferred Stock shall rank junior to all classes or series of the Corporation's preferred stock as to dividends and the distribution of assets upon liquidation, dissolution or winding-up.
- (B) The holders of shares of Class B Preferred Stock shall have the following voting rights:

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- (1) The holders of Class B Preferred Stock shall be entitled to vote on all matters submitted to a vote of the shareholders of the Corporation, voting together with the holders of Common Stock as one class. The holder of each share of Class B Preferred Stock shall be entitled to a number of votes equal to the number of shares of Common Stock into which such Class B Preferred Stock could be converted on the record date for determining the shareholders entitled to vote; it being understood that whenever the "Conversion Price" (as defined in Section 5 hereof) is adjusted as provided in Section 9 hereof, the number of votes of the Class B Preferred Stock shall also be correspondingly adjusted.
- (2) Except as otherwise required by law or set forth herein, holders of Class B Preferred Stock shall have no special voting rights and their consent shall not be required (except to the extent they are entitled to vote with holders of Common Stock as set forth herein) for the taking of any corporate action, including the issuance of any preferred stock now or hereafter authorized, provided, however, that the vote of at least 56-2/3t of the outstanding shares of Class B Preferred Stock, voting separately as a class, shall be necessary to approve any alteration, amendment or repeal of any provision of the Restated Certificate of Incorporation or any alteration, amendment or repeal of any provision of the resolutions relating to the designation, preferences and rights of Class B Preferred Stock (including any such alteration, amendment or repeal effected by any merger or consolidation in which the Corporation is the surviving or resulting corporation), if such amendment, alteration or repeal would alter or change the powers, preferences, or special rights of the Class B Preferred Stock so as to affect them adversely.
 - 5. Conversion into Common Stock.
- (A) A holder of shares of Class B Preferred Stock shall be entitled, at any time prior to the close of business on the date fixed for redemption of

such shares pursuant to Sections 6, 7 or 8 hereof, to cause any or all of such shares to be converted into shares of Common Stock. The number of shares of Common Stock into which each share of the Class B Preferred Stock may be converted shall be determined by dividing the Liquidation Price in effect at the time of conversion by the Conversion Price (as hereinsfter defined) in effect at the time of conversion. The Conversion Price per share at which shares of Common Stock shall be initially issuable upon conversion of any shares of Class B Preferred Stock shall be \$29.44741 subject to adjustment as hereinafter provided; that is, a conversion rate initially equivalent to 132.015 shares of Common Stock for each share of Class B Preferred Stock, which is subject to adjustment as hereinafter provided.

(B) Any holder of shares of Class B Preferred Stock desiring to convert such shares into shares of Common Stock shall surrender, if certificated, the certificate or certificates representing the shares of Class B Preferred Stock being converted, duly assigned or endorsed for transfer to the Corporation (or accompanied by duly executed stock powers relating thereto), or if uncertificated, a duly executed stock power relating thereto, at the principal executive office of the Corporation or the offices of the transfer agent for the Class B Preferred Stock or such office or offices in the continental United States of an agent for conversion as may from time to time be designated by notice to the holders of the Class B Preferred Stock by the Corporation or the transfer agent for the Class B Preferred Stock accompanied by written notice of conversion. Such notice of conversion shall specify (i) the number of shares of Class B Preferred Stock to be converted and the name or names in which such holder wishes the Common Stock and any shares of Class B Preferred Stock not to be so converted to be issued, and (ii) the address to

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which such holder wishes delivery to be made of a confirmation of such conversion, if uncertificated, or any new certificate which may be issued upon such conversion if certificated.

- (C) Upon surrender, if certificated, of a certificate representing a shares or shares of Class B Preferred Stock for conversion, or if uncertificated, of a duly executed stock power relating thereto, the Corporation shall issue and send by hand delivery (with receipt to be acknowledged) or by first class mail, postage prepaid, to the holder thereof or to such holder's designee, at the address designated by such holder, if certificated, a certificate or certificates for, or if uncertificated, confirmation of, the number of shares of Common Stock to which such holder shall be entitled upon conversion. In the event that there shall have been surrendered shares of Class B Preferred Stock, only part of which are to be converted, the Corporation shall issue and deliver to such holder or such holder's designee, if certificated, a new certificate or certificates representing the number of shares of Class B Preferred Stock which shall not have been converted, or if uncertificated, confirmation of the number of shares of Class B Preferred Stock which shall not have been converted.
- (D) The issuance by the Corporation of shares of Common Stock upon a conversion of shares of Class B Preferred Stock into shares of Common Stock upon a conversion of shares of Class B Preferred Stock into shares of Common Stock made at the option of the holder thereof shall be effective as of the earlier of (i) the delivery to such holder or such holder's designee of the certificates representing the shares of Common Stock issued upon conversion thereof if certificated or confirmation if uncertificated or (ii) the commencement of business on the second business day after the surrender of the certificate or certificates, if certificated, or a duly executed stock power. If uncertificated, for the shares of Class B Preferred Stock to be converted. On and after the effective date of conversion, the person or persons entitled to receive Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock, but no allowance or adjustment shall be made in respect of dividends payable to holders of Common Stock of record on any date prior to such effective date. The Corporation shall not be obligated to pay any dividends which shall have been declared and shall be payable to holders of shares of Class B Preferred Stock on a Dividend Payment Date if such Dividend Payment Date for such dividend shall be on or subsequent to the effective date of conversion of such shares.
- (E) The Corporation shall not be obligated to deliver to holders of Class B Preferred Stock any fractional share or shares of Common Stock issuable upon any conversion of such shares of Class B Preferred Stock, but in lieu thereof may make a cash payment in respect thereof in any manner permitted by
- (F) The Corporation shall at all times reserve and keep available out of its authorized and unissued Common Stock or treasury Common Stock, solely for issuance upon the conversion of shares of Class B Preferred Stock as herein provided, such number of shares of Common Stock as shall from time to time be issuable upon the conversion of all the shares of Class B Preferred Stock then outstanding.
 - Redemption at the Option of the Corporation.
- (A) The Class B Preferred Stock shall be redeemable, in whole or in part, at the option of the Corporation, out of funds legally available therefor, at any time after November 22, 1999 at 100% of the Liquidation Price per share in effect on the date fixed for redemption, plus an amount equal to all accrued (whether or not accumulated) and unpaid dividends thereon

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to the date fixed for redemption. The Class B Preferred Stock shall be redeemable, in whole or in part, out of funds legally available therefor, on or before November 22, 1993 only if permitted by Section 5 (C) or (D) at a price per share equal to. (i) if pursuant to Section 6(C), the redemption price set forth therein, or (ii) if pursuant to Section 6(D), 100.775% of the Liquidation Price in effect on the date fixed for redemption, plus, in each case, an amount equal to all accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption. Payment of the redemption price shall be made by the Corporation in cash or shares of Common Stock, or a combination thereof, as permitted by Section 6(E). From and after the date fixed for redemption, dividends on shares of Class B Preferred Stock called for redemption will cease to accrue, such shares will no longer be deemed to be outstanding and all rights

in respect of such shares of the Corporation shall cease, except for the right to receive the redemption price. If less than all of the outstanding shares of Class B Preferred Stock are to be redeemed, the Corporation shall either redem a portion of the shares of each holder determined pro rata based on the number of shares held by each holder or shall select the shares to be redeemed by lot, as may be determined by the Board of Directors of the Corporation.

- (B) Unless otherwise required by law, notice of redemption will be sent to the holders of Class B Preferred Stock at the address shown on the books of the Corporation or any transfer agent for Class B Preferred Stock by first class mail, postage prepaid, mailed not less than twenty (20) days nor more than sixty (60) days prior to the redemption date. Each notice shall state: (i) the redemption date; (ii) the total number of shares of the Class B Preferred Stock to be redeemed and, if fewer than all the shares held by such holder are to be redeemed, the number of such shares to be redeemed from such holder; (iii) the redemption price; (iv) the place or places where certificates, if certificated, for such shares are to be surrendered for payment of the redemption price; (v) that dividends on the shares to be redeemed will cease to accrue on such redemption date; (vi) the conversion rights of the shares to be redeemed, the period within which such conversion rights may be exercised, and the Conversion Price and number of shares of Common Stock issuable upon conversion of a share of Class B Preferred Stock at the time. Upon surrender of the certificates, if certificated, for any shares so called for redemption, or upon the date fixed for redemption if uncertificated such shares if not previously converted shall be redeemed by the Corporation on the date fixed for redemption and at the redemption price set forth in this Section 6.
- (C) In the event (i) of a change in the federal tax law or regulations of the United States of America or of an interpretation or application of such law or regulations or of a determination by a court of competent jurisdiction, which in any case has the effect of precluding the Corporation from claiming (other than for purposes of calculating any alternative minimum tax) any of the tax deductions for dividends paid on the Class B Preferred Stock when such dividends are used as provided under Section 404(x)(2) of the Internal Revenue Code of 1986, as amended (the "Code") as in effect on the date shares of Class B Preferred Stock are initially issued, or (ii) that the Corporation certifies to the holders of the Class B Preferred Stock that the Corporation has determined in good faith that the Plan either is not qualified within the meaning of Section 401(a) of the Code or is not an "employee stock ownership plan" within the meaning of 4975(e)(7) of the Code, the Corporation may, in its sole discretion and notwithstanding anything to the contrary in Section 6(A), at any time within one year of the occurrence of such event, elect either to (a) redeem any or all of such Class B Preferred Stock for cash or, if the Corporation so elects, in shares of Common Stock, or a combination of such shares of Common Stock and cash, as permitted by Section 6(B), at a redemption price equal to the higher of (x) the

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Liquidation Price per share on the date fixed for redemption or (y) the Fair Market Value (as defined in Section 9(G)(2)) of the number of shares of Common Stock into which each share of Class B Preferred Stock is convertible at the time the notice of such redemption is given, plus in either case an amount equal to accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption, or (b) exchange any or all of such shares of Class B Preferred Stock for securities of comparable value (as determined by an independent appraiser) that constitute "qualifying employer securities" with respect to a holder of Class B Preferred Stock within the meaning of Section 409(1) of the Code and Section 407(d)(5) of the Employment Retirement Income Security Act of 1974, as amended ("ERISA") or any successor provisions of law.

- (b) Notwithstanding anything to the contrary in Section 6(A), in the event that the Employees Savings Plan of Mobil Oil is terminated or the Employee Stock Ownership Plan incorporated therein is terminated or eliminated from such Plan, the Corporation may, in its sole discretion, call for redemption of any or all of the then outstanding Class B Preferred Stock at a redemption price calculated on the basis of the redemption prices provided in Section 6(A), increased by 50% of the amount thereof in excess of 100% of the Liquidation Price in effect on the date fixed for redemption.
- (E) The Corporation, at its option, may make payment of the redemption price required upon redemption of shares of Class B Preferred Stock in cash or in shares of Common Stock, or in a combination of such shares and cash, any such shares of Common Stock to be valued for such purpose at their Pair Market Value (as defined in Section 9(G)(2)); provided, however, that in calculating their Pair Market Value the Adjustment Period shall be deemed to be the five (5) consecutive trading days preceding the date of redemption.
 - 7. Redemption at the Option of the Holder.
- (A) Unless otherwise provided by law, shares of Class B Preferred Stock shall be redeemed by the Corporation out of funds legally available therefor for cash or, if the Corporation so elects, in shares of Common Stock, or a combination of such shares and cash, any such shares of Common Stock to be valued for such purpose as provided by Section 6(E), at a redemption price equal to the higher of (s) the Liquidation Price per share in effect on the date fixed for redemption or (y) the Fair Market Value of the number of shares of Common Stock into which each share of Class B Preferred Stock is convertible at the time the notice of such redemption is given plus in either case an amount egual to accrued (whether or not accumulated) and unpaid dividends thereon to the date fixed for redemption, at the option of the holder, at any time and from time to time upon notice to the Corporation given not less than five (5) business days prior to the date fixed by the holder in such notice of redemption, when and to the extent necessary for such holder to provide for distributions required to be made under, or to satisfy an investment election provided to participants in accordance with, the Employee Stock Ownership Plan incorporated in the Employees Savings Plan of Mobil Oil, or any successor plan or when the holder lects to redeem shares of Class B Preferred Stock in respect of any Regular or Supplemental Preferred Dividend (a "Dividend Redemption"). In the case of any Dividend Redemption, such holder shall give the notice specified above within five (5) business days after the related Dividend Payment Date and such redemption shall be effective as to such number of shares of Class B Preferred Stock at located

or credited to the accounts of participants in the Employee Stock Ownership Plan incorporated in

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the Employees Savings Plan of Mobil Dil, or any successor plan divided by (y) the redemption price specified above.

(B) Shares of Class B Preferred Stock shall be redeemed by the Corporation out of funds legally available therefor for cash or, if the Corporation so elects, in shares of Common Stock, or a combination of such shares of Common Stock and cash, any such shares of Common Stock to be valued for such purpose as provided by Section 6(8), at a redemption price equal to the liquidation Price plus an amount equal to accrued and unpaid dividends thereon to the date fixed for redemption, at the option of the holder, at any time and from time to time upon notice to the Corporation given not less than five (5) business days prior to the date fixed by the holder in such notice for such redemption, upon certification by such holder to the Corporation of the following events: (i) when and to the extent necessary for such holder to make any payments of principal, interest or premium due and payable (whether as scheduled, upon acceleration or otherwise) upon any obligations of the trust established under the Employee Stock Ownership Plan incorporated in the Employees Savings Plan of Mobil Oil in connection with the acquisition of Class a Preferred Stock or any indebtedness, expenses or costs incurred by the holder for the benefit of the Plan, or (ii) when and if it shall be established to the satisfaction of the holder that the Plan has not initially been determined by the Internal Revenue Service to be qualified as a stock bonus plan and an employee stock ownership plan within the meaning of Sections 401(a) or 4975(e)(7) of the Code, respectively.

8. Consolidation, Merger, etc.

(A) In the event that the Corporation shall consummate any consolidation or merger or similar transaction, however named, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged solely for or changed, reclassified or converted solely into shares of any successor or resulting company (including the Corporation) that constitute "qualifying employer securities" that are common stock with respect to a holder of Class B Preferred Stock within the meanings of Section 409(1) of the Code and Section 407(d) (5) of ERISA, or any successor provision of law, and, if applicable, for a cash payment in lieu of fractional shares, if any, then, in such event, the terms of such consolidation or merger or similar transaction shall provide that the shares of Class B Preferred Stock of such holder shall be converted into or exchanged for and shall become preferred shares of such successor or resulting company, having in respect of such company insofar as possible the same powers, preferences and relative, participating, optional or other special rights (including the redemption rights provided by Sections 6, 7, and 8 hereof), and the qualifications, limitations or restrictions thereon, that the class B Preferred Stock had immediately prior to such transaction, provided, however, that after such transaction each share of stock into which the Class 8 Preferred Stock is so converted or for which it is exchanged shall be convertible, pursuant to the terms and conditions provided by Section 5 hereof, into the number of shares of Common Stock into which such shares of Class B Preferred Stock could have been converted pursuant to Section 5 hereof immediately prior to such transaction, and provided, further, that if by virtue of the structure of such transaction and provided, further, that if by virtue of the structure of such transaction, a holder of Common Stock is required to make an election with respect to the nature and kind of consideration to be received in such transaction, which election cannot

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and kind of qualifying employer securities receivable by a holder of the number of shares of Common Stock into which the shares of Class B Preferred Stock could have been converted pursuant to Section 5 hereof immediately prior to such transaction (it being understood that if the kind or amount of qualifying employer securities receivable in respect of each share of Common Stock upon such transaction is not the same for each such share, then the kind and amount of qualifying employer securities deemed to be receivable in respect of each share of Common Stock for purposes of this proviso shall be the kind and amount so receivable per share of Common Stock by a plurality of such shares). The rights of the Class B Preferred Stock as preferred shares of such successor resulting company shall successively be subject to adjustments pursuant to Section 9 hereof after any such transaction as nearly equivalent to the adjustments provided for by such Section prior to such transaction. The Corporation shall not consummate any such merger, consolidation or similar transaction unless all the terms of this Section 8(A) are complied with.

(B) In the event that the Corporation shall consummate any consolidation or merger or similar transaction, however named, pursuant to which the outstanding shares of Common Stock are by operation of law exchanged for or changed, reclassified or converted into other shares or securities or cash or any other property, or any combination thereof, other than any such consideration which is constituted solely of qualitying employer securities that are common stock (as referred to in Section 8(A)) and cash payments, if applicable, in lieu of fractional shares, outstanding shares of Class B Preferred Stock shall, without any action on the part of the Corporation or any holder thereof (but subject to Section 8(C)), be automatically converted immediately prior to the consummation of such merger, consolidation or similar transaction into shares of Common Stock at the conversion rate then in effect so that each share of Class B Preferred Stock shall, by virtue of such transaction and on the same terms as apply to the holders of Common Stock, be converted into or exchanged for the aggregate amount of shares, securities, cash or other property (payable in like kind) receivable by a holder of the number of shares of Common Stock into which such shares of Class B Preferred Stock could have been converted immediately prior to such transaction if such holder of Common Stock failed to exercise any rights of election as to the kind or amount of shares, securities, cash or other property receivable upon such transaction (provided that, if the kind or amount of shares, securities, cash or other

property receivable upon such transaction is not the same for each non-electing share, then the kind and amount of shares, securities, cash or other property receivable upon such transaction for each non-electing share shall be the kind and amount so receivable per share by a plurality of non-electing shares).

(C) In the event the Corporation shall enter into any agreement providing for any consolidation or merger or similar transaction described in Section 8(B), then the Corporation shall as soon as practicable thereafter (and in any event at least ten (10) business days before consummation of such transaction) give notice of such agreement and the material terms thereof to each holder of class B Preferred Stock and each such holder shall have the right to elect, by written notice to the Corporation, to receive, upon consummation of such transaction (if and when such transaction is consummated), out of funds legally available therefor, from the Corporation or the successor of the Corporation, in redemption and retirement of such class B Preferred Stock, in lieu of any cash or other securities which such holder would otherwise be entitled to receive under Section 8(B) hereof, a cash payment equal to the redemption price specified in Section 6(A) in effect on the date of the consummation of such transaction plus an amount equal to all accrued (whether or not accumulated) and unpaid dividends. No such notice

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of redemption shall be effective unless given to the Corporation prior to the close of business of the fifth business day prior to consummation of such transaction, unless the Corporation or the successor of the Corporation shall waive such prior notice, but any notice of redemption so given prior to such time may be withdrawn by notice of withdrawal given to the Corporation prior to the close of business on the fifth business day prior to consummation of such transaction.

9. Anti-dilution Adjustments.

(A) (1) Subject to the provisions of Section 9(E), in the event the Corporation shall, at any time or from time to time while any of the shares of the Class B Preferred Stock are outstanding, (i) pay a dividend or make a distribution in respect of the Common Stock in shares of Common Stock or (ii) subdivide the outstanding shares of Common Stock into a greater number of shares, in each case whether by reclassification of shares, recapitalization of the Corporation (excluding a recapitalization or reclassification effected by a merger or consolidation to which Section 8 hereof applies) or otherwise, then, in such event, the Board of Directors shall, to the extent legally permissible, declare a dividend in respect of the Class B Preferred Stock in shares of Class B Preferred Stock (a "Special Dividend") in such a manner that a holder of Class B Preferred Stock equal to the product of the number of such shares of Class B Preferred Stock equal to the product of the number of such shares held prior to such event times a fraction (the "Sec. 9(A) Non-Dilutive Share Fraction"), the numberator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock outstanding immediately before such event. A Special Dividend declared pursuant to this Section 9(A) (1) shall be effective, upon payment of such dividend or distribution in respect of the Common Stock, as of the record date for the determination of shareholders entitled to receive such dividend or distribution (on a retroactive basis), and in the case of a subdivision shall become effective immediately as of the effective date thereof. Concurrently w

(2) The Corporation and the Board of Directors shall each use its best efforts to take all necessary steps or to take all actions as are reasonably necessary or appropriate for declaration of the Special Dividend provided in Section 9(A) (1) but shall not be required to call a special meeting of shareholders in order to implement the provisions thereof. If for any reason the Board of Directors is precluded from giving full effect to the Special Dividend provided in Section 9(A) (1), then no such Special Dividend shall be declared, but instead the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately before the event by the Sec. 9(A) Non-Dilutive Share Fraction and the Liquidation Price and the Regular Preferred Dividend Rate will not be adjusted. An adjustment to the Conversion Price made pursuant to this Section 9(A) (2) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of holders entitled to receive such dividend or distribution (on a retroactive basis), and in the case of a subdivision shall become effective immediately as of the effective date thereof. If subsequently the Board of Directors is able to give full effect to the Special Dividend as provided in Section 9(A) (1), then such Special Dividend will be declared and other adjustments will be made in accordance with the provisions

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of Section 9(A)(1) and the adjustment in the Conversion Price as provided in this Section 9(A)(2) will automatically be reversed and nullified prospectively.

(3) Subject to the provisions of Section 9(E) hereof, in the event the Corporation shall, at any time or from time to time while any of the shares of the Class B Preferred Stock are outstanding, combine the outstanding shares of Common Stock into a lesser number of shares, whether by reclassification of shares, recapitalization of the Corporation (excluding a recapitalization or reclassification effected by a merger, consolidation or other transaction to which Section B hereof applies) or otherwise, then, in such event, the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately before such event by the Sec. 9(A) Non-Dilutive Share Fraction and the Liquidation Price and the Regular Preferred Dividend Rate will not be adjusted. An adjustment to the Conversion Price made pursuant to this Section 9(A)(3) shall be given effect immediately as of the effective date of such combination.

(B) (1) Subject to the provisions of Section 9(E), in the event the Corporation shall, at any time or from time to time while any of the shares of

Class B Preferred Stock are outstanding issue to holders of shares of Common Stock as a dividend or distribution, including by way of reclassification of shares or a recapitalization of the Corporation, any right or warrant to purchase shares of Common Stock (but not including as a right or warrant for this purpose any security convertible into or exchangeable for shares of Common Stock) for a consideration having a Fair Market Value (as defined in Section 9 (G) (2) hereof) per share less than the Fair Market Value of a share of Common Stock on the date of issuance of such right or warrant, then, in such event, the Board of Directors shall, to the extent legally permissible, declare a Special Dividend in such a manner that a holder of Class B Preferred Stock will become a holder of that number of shares of Class B Preferred Stock equal to the product of the number of such shares held prior to such event times a fraction (the "Sec. 9(B) Non-Dilutive Share Fraction"), the numerator of which is the number of shares of Common Stock outstanding immediately before such issuance of rights or warrants plus the maximum number of shares of Common Stock outstanding immediately before such issuance of warrants or rights and warrants and the denominator of which is the number of shares of Common Stock outstanding immediately before such issuance of warrants or rights plus the number of shares of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock at the time of such issuance for the maximum aggregate upon such issuance of rights or warrants. Concurrently with the declaration of the Special Dividend declared pursuant to this Section 9(B)(1), the Conversion Price, the Liquidation Price

(2) The Corporation and the Board of Directors shall each use its best efforts to take all necessary steps or to take all actions as are reasonably necessary or appropriate for declaration of the Special Dividend provided in Section 9(B) (1) but shall not be required to call a special meeting of shareholders in order to implement the provisions thereof. If for any reason the Board of Directors is precluded from giving full effect to the Special Dividend provided in Section 9(B)(1), then no such Special Dividend shall be declared, but instead the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately

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before the event by the Sec. 9(B) Non-Dilutive Share Fraction and the Liquidation Price and the Preferred Dividend Rate will not be adjusted. An adjustment to the Conversion Price made pursuant to this Section 9(B)(2) shall be given effect upon issuance of rights or warrants. If subsequently the Board of Directors is able to give full effect to the Special Dividend as provided in Section 9(B)(1), then such Special Dividend will be declared and other adjustments will be made in accordance with the provisions of Section 9(B)(1) and the adjustment in the Conversion Price as provided in this Section 9(B)(2) will automatically be reversed and nullified prospectively.

(C)(1)(i) Subject to the provisions of Section 9(E), in the event the Corporation shall, at any time or from time to time while any of the shares of Class B Preferred Stock are outstanding, issue, sell or exchange shares of Common Stock (other than pursuant to (x) any right or warrant to purchase or acquire shares of Common Stock (including as such a right or warrant any security convertible into or exchangeable for shares of Common Stock), or (y) any employee or director incentive, compensation or benefit plan or arrangement of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted) at a purchase price per share less than the Fair Market Value of a share of Common Stock on the date of such issuance, sale or exchange, then, in such event, the Board of Directors shall, to the extent legally permissible, declare a Special Dividend in such a manner that a holder of Class B Preferred Stock will become the holder of that number of shares of Class B Preferred Stock equal to the product of the number of such shares held prior to such event times a fraction (the "Sec. 9(C)(1)(i) Non-Dilutive Share Fraction"), the numerator of which is the number of shares of Common Stock outstanding immediately before such issuance, sale or exchange plus the number of shares of Common Stock so issued, sold or exchanged and the denominator of which is the number of shares of Common Stock outstanding immediately before such issuance, sale or exchange plus the number of shares of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which could be purchased at the Fair

(ii) In the event that the Corporation shall, at any time or from time to time while any Class B Preferred Stock is outstanding, issue, sell or exchange any right or warrant to purchase or acquire shares of Common Stock (including as such a right or warrant any security convertible into or exchangeable for shares of Common Stock other than pursuant to (x) any employee or director incentive, compensation or benefit plan or arrangement of the Corporation or any subsidiary of the Corporation heretofore or hereafter adopted and (y) any dividend or distribution on shares of Common Stock contemplated in Section 9(A) (1)) for a consideration having a Fair Market Value, on the date of such issuance, sale or exchange, less than the Non-Dilutive Amount (as defined in Section 9(G)(3) hereof), then, in such event, the Board of Directors shall, to the extent legally permissible, declare a Special Dividend in such a manner that a holder of Class B Preferred Stock will become the holder of that number of shares of Class B Preferred Stock equal to the product of the number of such shares held prior to such event times a fraction (the "Sec. 9(C)(1)(ii) Non-Dilutive Share Fraction"), the numerator of which is the number of shares of Common Stock outstanding immediately before such issuance of rights or warrants plus the maximum number of shares of Common Stock outstanding immediately before such issuance of rights or warrants the number of shares of Common Stock which could be purchased at the Fair Market Value of a share of Common Stock which time of such issuance for the total of (x) the maximum

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aggregate consideration payable at the time of the issuance, sale or exchange of such right or warrant and (y) the maximum aggregate consideration payable upon

exercise in full of all such rights or warrants.

- (iii) A Special Dividend declared pursuant to this Section 9(C)(1) shall be effective upon the effective date of such issuance, sale or exchange. Concurrently with the declaration of the Special Dividend pursuant to this Section 9(C)(1), the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of all shares of class B Preferred Stock shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate, respectively, in effect immediately before such event by the Sec. 9(C)(1)(i) or Sec. 9(C)(1)(ii) Non-Dilutive Share Fraction, as the case may be.
- (2) The Corporation and the Board of Directors shall each use its best efforts to take all necessary steps or to take all actions as are reasonably necessary or appropriate for declaration of the Special Dividend provided in Section 9(C)(1)(i) or (ii) but shall not be required to call a special meeting of shareholders in order to implement the provisions thereof. If for any reason the Board of Directors is precluded from giving full effect to any Special Dividend provided in Section 9(C)(1), then no such Special Dividend shall be declared, but instead the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately before the event by the Sec. 9(C)(1)(i) or Sec. 9(C)(1)(ii) Non-Dilutive Share Fraction, as the case may be, and the inquidation Price and the Regular Preferred Dividend Rate will not be adjusted. An adjustment to the Conversion Price made pursuant to this Section 9(C)(2) shall be given effect upon the effective date of such issuance, sale or exchange. If subsequently the Board of Directors is able to give full effect to the Special Dividend as provided in Section 9(C)(1), then such Special Dividend will be declared and other adjustments will be made in accordance with the provisions of Section 9(C)(1) and the adjustment in the Conversion Price as provided in this Section 9(C)(2) will automatically be reversed and nullified prospectively.
- (D) (1) Subject to the provisions of Section 9(E), in the event the Corporation shall, at any time or from time to time while any of the shares of class B Preferred Stock are outstanding, make an Extraordinary Distribution (as defined in Section 9(G)(1) hereof) in respect of the Common Stock, whether by dividend, distribution, reclassification of Shares or recapitalization of the Corporation (including capitalization or reclassification effected by a merger or consolidation to which Section 8 hereof does not apply) or effect a Pro Rata Repurchase (as defined in Section 9(G)(4) hereof) of Common Stock, then, in such event, the Board of Directors shall, to the extent legally permissible, declare a Special Dividend in such a manner that a holder of Class B Preferred Stock will become a holder of that number of shares of Class B Preferred Stock equal to the product of the number of such shares held prior to such event times a fraction (the "Sec. 9(D) Non-Dilutive Share Fraction"), the numerator of which is the product of (a) the number of shares of Common Stock outstanding immediately before such Extraordinary Distribution or Pro Rata Repurchase minus, in the case of a Pro Rata Repurchase, the number of shares of Common Stock repurchased by the Corporation multiplied by (b) the Fair Market Value of a share of Common Stock on the day before the ex-dividend date with respect to an Extraordinary Distribution which is paid other than in cash, or on the applicable expiration date (including all extensions thereof) of any tender offer which is a Pro Rata Repurchase or on the date of purchase with respect to any Pro Rata Repurchase which is not a

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tender offer, as the case may be, and the denominator of which is (i) the product of (x) the number of shares of Common Stock outstanding immediately before such Extraordinary Distribution or Pro Rata Repurchase multiplied by (y) the Fair Market Value of a share of Common Stock on the day before the exdividend date with respect to an Extraordinary Distribution which is paid in cash and on the distribution date with respect to an Extraordinary Distribution which is paid other than in cash, or on the applicable expiration date (including all extensions thereof) of any tender offer which is a Pro Rata Repurchase, or on the date of purchase with respect to any Pro Rata Repurchase which is not a tender offer, as the case may be, minus (ii) the Fair Market Value of the Extraordinary Distribution or the aggregate purchase price of the Pro Rata Repurchase, as the case may be. The Corporation shall send each holder of Class & Preferred Stock (i) notice of its intent to make an Extraordinary Distribution and (ii) notice of any offer by the Corporation to make a Pro Rata Repurchase, in each case at the same time as, or as soon as practicable after, such offer is first communicated to holders of Common Stock or, in the case of an Extraordinary Distribution, the announcement of a record date in accordance with the rules of any stock exchange on which the Common Stock is listed or admitted to trading. Such notice shall indicate the intended record date and the amount and nature of such dividend or distribution, or the number of shares subject to such offer for a Pro Rata Repurchase and the purchase price payable by the Corporation pursuant to such offer, as well as the Conversion Price and the number of shares of Common Stock into which a share of Class & Preferred Stock may be converted at such time. Concurrently with the Special Dividend Preferred Dividend Rate of all shares of Class & Preferred Stock shall be adjusted by dividing the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of all sh

(2) The Comporation and the Board of Directors shall each use its best efforts to take all necessary steps or to take all actions as are reasonably necessary or appropriate for declaration of the Special Dividend provided in Section 9(D)(1) but shall not be required to call a special meeting of shareholders in order to implement the provisions thereof. If for any reason the Board of Directors is precluded from giving full effect to the Special Dividend provided in Section 9(D)(1), then no such Special Dividend shall be declared, but instead the Conversion Price shall automatically be adjusted by dividing the Conversion Price in effect immediately before the event by the Sec. 9(D) Non-Dilutive Share Fraction, and the Liquidation Price and the Regular Preferred Dividend Rate will not be adjusted. If subsequently the Board of Directors is able to give full effect to the Special Dividend as provided in Section 9(D)(1), then such Special Dividend will be declared and other adjustments will be made in accordance with the provisions of Section 9(D)(1) and the adjustment in the Conversion Price as provided in this Section 9(D)(2)

will automatically be reversed and nullified prospectively.

(E) Notwithstanding any other provision of this Section 9, the Corporation shall not be required to make (i) any Special Dividend or any adjustment of the Conversion Price, the Liquidation Price or the Regular Preferred Dividend Rate unless such adjustment would require an increase or decrease of at least one percent (it) in the number of shares of class B Preferred Stock outstanding, or. (ii) if no additional shares of Class B Preferred Stock are issued, any adjustment of the Conversion Price unless such adjustment would require an increase or decrease of at least one percent (it) in the Conversion Price. Any lesser adjustment

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shall be carried forward and shall be made no later than the time of, and together with, the next subsequent adjustment which, together with any adjustment or adjustments so carried forward, shall amount to an increase or decrease of at least one percent (1%) of the number of shares of Class B Preferred Stock outstanding or, if no additional shares of Class B Preferred Stock are being issued, an increase or decrease of at least one percent (1%) of the Conversion Price, whichever the case may be.

(P) If the Corporation shall make any dividend or distribution on the Common Stock or issue any Common Stock, other capital stock or other security of the Corporation or any rights or warrants to purchase or acquire any such security, which transaction does not result in an adjustment to the number of shares of Class B Preferred Stock outstanding or the Conversion Price pursuant to the foregoing provisions of this Section 9, the Board of Directors of the Corporation may, in its sole discretion, consider whether such action is of such a nature that some type of equitable adjustment should be made in respect of such transaction. If in such case the Board of Directors of the Corporation determines that some type of adjustment should be made, an adjustment shall be made effective as of such date as determined by the Board of Directors of the Corporation. The determination of the Board of Directors of the Corporation as to whether some type of adjustment should be made pursuant to the foregoing provisions of this Section 9(F), and, if so, as to what adjustment should be made and when, shall be final and binding on the Corporation and all shareholders of the Corporation. The Corporation to those required by the foregoing provisions of this Section 9, as shall be necessary in order that any dividend or distribution in shares of capital stock of the Corporation, subdivision, reclassification or combination of shares of the Corporation or any recapitalization of the Corporation shall not be taxable to holders of the Common Stock.

(G) For purposes hereof, the following definitions shall apply:

(1) "Extraordinary Distribution" shall mean any dividend or other distribution to holders of Common Stock effected while any of the shares of Class B Preferred Stock are outstanding of (i) cash or (ii) any shares of capital stock of the Corporation (other than shares of Common Stock), other securities of the Corporation (other than securities of the type referred to in Section 9(B)), evidences of indebtedness of the Corporation or any other person or any other property (including shares of any subsidiary of the Corporation), or any combination thereof, where the aggregate amount of such cash dividend or other distribution together with the amount of all cash dividends and other distributions made during the preceding period of twelve (12) months, when combined with the aggregate amount of all Pro Rata Repurchases (for this purpose, including only that portion of the aggregate purchase price of such Pro Rata Repurchase which is in excess of the Fair Market Value of the Common Stock repurchased as determined on the applicable expiration date (including all extensions thereof) of any tender offer or exchange offer which is a Pro Rata Repurchase, or the date of purchase with respect to any other Pro Rata Repurchase which is not a tender offer or exchange offer) made during such period, exceeds twelve and one-half percent (12.5%) of the aggregate Fair Market Value of all shares of Common Stock outstanding on the day before the excludend date with respect to such Extraordinary Distribution which is paid in cash and on the distribution date with respect to an Extraordinary Distribution which is paid in cash and on the distribution date with respect to an Extraordinary Distribution for purposes of Section 9(D) shall be the sum of the Fair Market Value of such Extraordinary Distribution plus the aggregate amount of any cash dividends or

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other distributions which are not Extraordinary Distributions made during such twelve month period and not previously included in the calculation of an adjustment pursuant to Section 9(D), but shall exclude the aggregate amount of regular quarterly dividends declared by the Board of Directors and paid by the Corporation in such twelve month period.

(2) "Fair Market Value" shall mean, as to shares of Common Stock or any other class of capital stock or securities of the Corporation or any other issuer which are publicly traded, the average of the Current Market Prices (as hereinafter defined) of such shares or securities for each day of the Adjustment Period (as hereinafter defined). "Current Market Price" of publicly traded shares of Common Stock or any other class of capital stock or other security of the Corporation or any other issuer for a day shall mean the last reported sales price, regular way, or, in case no sale takes place on such day, the average of the reported closing bid and asked prices, regular way, in either case as reported on the New York Stock Exchange Composite Tape or, if such security is not listed or admitted to trading on the New York Stock Exchange, on the principal national securities exchange on which such security is listed or admitted to trading or, if not listed or admitted to trading on any national securities exchange, on the NASDAQ National Market System or, if such security is not quoted on such National Market System, the average of the closing bid and asked prices on each such day in the over-the-counter market as reported by NASDAQ or, if bid and asked prices for such security on each such day shall not have been reported through NASDAQ, the average of the bid and asked prices for such security on each such day shall not have been reported through NASDAQ, the average of the bid and asked prices for such security and a market in such security selected for such purpose by the Board of Directors of the Corporation on each trading day during the Adjustment Period. "Adjustment Period" shall mean the period of five consecutive trading days.

selected by the Board of Directors of the Corporation, during the twenty (20) trading days preceding, and including, the date as of which the Fair Market Value of a security is to be determined. The "Fair Market Value" of any security which is not publicly traded or of any other property shall mean the fair value thereof as determined by an independent investment banking or appraisal firm experienced in the valuation of such securities or property selected in good faith by the Board of Directors of the Corporation, or, if no such investment banking or appraisal firm is in the good faith judgment of the Board of Directors available to make such determination, as determined in good faith by the Board of Directors of the Corporation.

(3) "Non-Dilutive Amount" in respect of an issuance, sale or exchange by the Corporation of any right or warrant to purchase or acquire shares of Common Stock (including any security convertible into or exchangeable for shares of Common Stock) shall mean the difference between (i) the product of the Fair Market Value of a share of Common Stock on the day preceding the first public announcement of such issuance, sale or exchange multiplied by the maximum number of shares of Common Stock which could be acquired on such date upon the exercise in full of such rights or warrants (including upon the conversion or exchange of all such convertible or exchangeable securities), whether or not exercisable (or convertible or exchangeable) at such date, and (ii) the aggregate amount payable pursuant to such right or warrant to purchase or acquire such maximum number of shares of Common Stock; provided, however, that in no event shall the Non-Dilutive Amount be less than zero. For purposes of the foregoing sentence, in the case of a security convertible into or exchangeable for shares of Common Stock shall be the Fair Market Value of such security on the date of the issuance, sale or exchange of such security by the Corporation.

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- (4) "Pro Rata Repurchase" shall mean any purchase of shares of Common Stock by the Corporation or any subsidiary thereof, whether for cash, shares of capital stock of the Corporation, other securities of the Corporation, evidences of indebtedness of the Corporation or any other person or any other property (including shares of a subsidiary of the Corporation), or any combination thereof, effected while any of the shares of Class B Preferred Stock are outstanding, pursuant to any tender offer or exchange offer subject to Section 13(e) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or any successor provision of law, or pursuant to any other offer available to substantially all holders of Common Stock, provided, however, that no purchase of shares by the Corporation or any subsidiary thereof made in open market transactions shall be deemed a Pro Rata Repurchase. For purposes of this section 9(G), shares shall be deemed to have been purchased by the Corporation or any subsidiary thereof "in open market transactions" if they have been purchased substantially in accordance with the requirements of Rule 10b-18 as in effect under the Exchange Act on the date shares of class B Preferred Stock are initially issued by the Corporation or on such other terms and conditions as the Board of Directors of the Corporation shall have determined are reasonably designed to prevent such purchases from having a material effect on the trading market for the Common Stock.
- (H) Whenever an adjustment increasing the number of shares of Class B Preferred Stock outstanding is required pursuant hereto, the Board of Directors shall take action as is necessary so that a sufficient number of shares of Class B Preferred Stock are designated with respect to such increase resulting from such adjustment. Whenever an adjustment to the Conversion Price, the Liquidation Price or the Regular Preferred Dividend Rate of the Class B Preferred Stock is required pursuant hereto, the Corporation shall forthwith place on file with the transfer agent for the Common Stock and the Class B Preferred Stock, if there be one, and with the Treasurer of the Corporation, a statement signed by the Treasurer or any Assistant Treasurer of the Corporation stating the adjusted Conversion Price, Liquidation Price and Regular Preferred Dividend Rate determined as provided herein. Such statement shall set forth in reasonable detail such facts as shall be necessary to show the reason and the namner of computing such adjustment, including any determination of Fair Market Value involved in such computation. Promptly after each adjustment to the number of shares of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price on the Regular Preferred Dividend Rate, the Corporation shall mail a notice thereof and of the then prevailing number of shares of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of Class B Preferred Stock outstanding, the Conversion Price, the Liquidation Price and the Regular Preferred Dividend Rate of Class B Preferred Stock outstanding.

10. Miscellaneous.

(A) All notices referred to herein shall be in writing, and all notices hereunder shall be deemed to have been given upon the earlier of receipt thereof or three (3) business days after the mailing thereof if sent by registered mail (unless first-class mail shall be specifically permitted for such notice under the terms hereof) with postage prepaid, addressed: (1) if to the Corporation, to its office at 5959 Las Colinas Boulevard, Irving, Texas 75039 (Attention: Treasurer) or to the transfer agent for the Class B Preferred Stock, or other agent of the Corporation designated as permitted hereby or (1i) if to any holder of the Class B Preferred Stock or Common Stock, as the case may be, to such holder at the address of such holder as listed in the stock record books of the Corporation (which may include the records of any transfer agent for the Class B Preferred Stock or Common Stock, as the case may be) or (iii) to such other

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address as the Corporation or any such holder, as the case may be, shall have designated by notice similarly given.

(B) The term "Common Stock" as used herein means the Corporation's no par value common stock, as the same exists at the Effective Date, or any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to without par value, or from without par value to par value. In the event that, at any time as a result of an adjustment made pursuant to Section 9 hereof, the holder of any shares of the Class B Preferred Stock upon thereafter surrendering such shares for conversion shall become entitled to receive any shares or other

securities of the Corporation other than shares of Common Stock, the antidilution provisions combained in Section 9 hereof shall apply in a manner and on terms as nearly equivalent as practicable to the provisions with respect to Common Stock, and the provisions of Sections 1 through 8 and 10 hereof with respect to the Common Stock shall apply on like or similar terms to any such other shares of securities.

- (C) The term "Effective Date" shall mean the date of effectiveness of the Certificate of Merger of Lion Acquisition Subsidiary Corporation with and into Mobil Corporation filed in the office of the Secretary of State of the State of Delaware.
- (D) The Corporation shall pay any and all stock transfer and documentary stamp taxes that may be payable in respect of any issuance or delivery of shares of Class B Preferred Stock or shares of Common Stock or other securities issued on account of Class B Preferred Stock pursuant thereto or certificate representing such shares or securities. The Corporation shall not, however, be required to pay any such tax which may be payable in respect of any transfer involved in the issuance or delivery of shares of Class B Preferred Stock or Common Stock or other securities in a name other than that in which the shares of Class B Preferred Stock with respect to which such shares or other securities are issued or delivered were registered, or in respect of any payment to any person with respect to any such shares or securities other than a payment to the registered holder thereof, and shall not be required to make any such issuance, delivery or payment unless and until the person otherwise entitled to such issuance, delivery or payment has paid to the Corporation the amount of any such tax or has established, to the satisfaction of the Corporation, that such tax has been paid or is not payable.
- (B) In the event that a holder of shares of Class B Preferred Stock shall not by written notice designate the name in which shares of Common Stock to be issued upon conversion of such shares should be registered or to whom payment upon redemption of shares of Class B Preferred Stock should be made or the address to which the certificate or certificates representing such shares, or such payment, should be sent, the Corporation shall be entitled to register such shares, and make such payment, in the name of the holder of such Class B Preferred Stock as shown on the records of the Corporation and to send the certificate or certificates or other documentation representing such shares, or such payment, to the address of such holder shown on the records of the Corporation.
- (F) The Corporation may appoint, and from time to time discharge and change, a transfer agent for the Class B Preferred Stock. Upon any such appointment or discharge of a transfer agent, the Corporation shall send notice thereof by first-class mail, postage prepaid, to each holder of record of Class B Preferred Stock.

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(G) Any shares of Common Stock into which the shares of Class B Preferred Stock shall be converted, may be uncertificated shares, provided that

the names of the holders of all uncertificated shares and the number of such shares held by each holder shall be registered at the offices of the Corporation or the transfer agent for such shares. In the event that any shares shall be uncertificated, all references herein to surrender or issuance of stock certificates shall have no application to such uncertificated shares.

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EXHIBIT 3(ii)

EXXON MOBIL CORPORATION

INCORPORATED IN NEW JERSEY

BY-LAWS

ARTICLE I

Meetings of Shareholders

- Meetings of shareholders may be held on such date and at such time and place, within or without the State of New Jersey, as may be fixed by the board of directors and stated in the notice of meeting.
- The date for each annual meeting of shareholders, fixed as provided in Section 1 of this Article I, shall be a date not more than thirteen months after the date on which the last annual meeting of shareholders was held. The directors shall be elected at the annual meeting of shareholders.
- Special meetings of the shareholders may be called by the board of directors, the chairman of the board or the president.
- 4. Except as otherwise provided by statute, written notice of the date, time, place and purpose or purposes of every meeting of shareholders shall be given not less than ten nor more than sixty days before the date of the meeting, either personally or by mail, to each shareholder of record entitled to vote at the meeting. The business transacted at meetings shall be confined to the purposes specified in the notice.
- 5. Unless otherwise provided by statute the holders of shares entitled to cast a majority of votes at a meeting, present either in person or by proxy, shall constitute a quorum at such meeting. Less than a quorum may adjourn.

- 6. For the purpose of determining the shareholders entitled to notice of or to vote at any meeting of shareholders or any adjournment thereof, or for the purpose of determining shareholders entitled to receive payment of any dividend or allotment of any right, or for the purpose of any other action, the board of directors may fix in advance a date as the record date for any such determination of shareholders. Such date shall not be more than sixty nor less than ten days before the date of such meeting, nor more than sixty days prior to any other action.
- 7. The board of directors may, in advance of any shareholders' meeting, appoint one or more inspectors to act at the meeting or any adjournment thereof. If inspectors are not so appointed by the board or shall fail to qualify, the person presiding at a shareholders' meeting may, and at the request of any shareholder entitled to vote thereat, shall, make such appointment. In case any person appointment made by the board in advance of the meeting or at the meeting by the person presiding at the meeting. Each inspector, before entering upon the discharge of the duties of inspector, shall take and sign an oath faithfully to execute such duties at such meeting with strict impartiality and according to the best of the inspector's ability.

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The inspectors shall determine the number of shares outstanding and the voting power of each, the shares represented at the meeting, the existence of a quorum, the validity and effect of proxies, and shall receive votes or consents, hear and determine all challenges and questions arising in connection with the right to vote, count and tabulate all votes or consents, determine the result, and do such acts as are proper to conduct the election or vote with fairness to all shareholders. If there are three or more inspectors, the act of a majority shall govern. On request of the person presiding at the meeting or any shareholder entitled to vote thereat, the inspectors shall make a report in writing of any challenge, question or matter determined by them. Any report made by them shall be prima facie evidence of the facts therein stated, and such report shall be filed with the minutes of the meeting.

ARTICLE II

Board of Directors

- 1. The business and affairs of the corporation shall be managed by its board of directors consisting of not less than ten nor more than nineteen members, who shall hold office until the next annual meeting and until their successors shall have been elected and qualified. The actual number of directors shall be determined from time to time by resolution of the board. If at any time, except at the annual meeting, the number of directors shall be increased, the additional director or directors may be elected by the board, to hold office until the next annual meeting and until their successors shall have been elected and qualified.
- 2. The organization meeting of the board of directors, for the purpose of organization or otherwise, shall be held without further notice on the day of the annual meeting of shareholders, at such time and place as shall be fixed from time to time pursuant to resolution of the board. Other regular meetings of the board may be held without further notice at such times and places as shall be fixed from time to time pursuant to resolution of the board. The chairman of the board, the president, any vice president who is a member of the board, or the secretary may change the day or hour or place of any single regular meeting from that determined by the board upon causing that prior notice of such change be transmitted to all directors.

Special meetings of the board may be called at the direction of the chairman of the board, of the president or of any vice president who is a member of the board, or, in the absence of such officers, at the direction of any one of the directors. Any such meeting shall be held on such date and at such time and place as may be designated in the notice of the meeting.

Notices required under this section may be transmitted in person, in writing, or by telephone, telegram, cable or radio, and shall be effective whether or not actually received, provided they are duly transmitted not less than forty-eight hours in advance of the meeting. Notice may be waived in writing before or after a meeting. No notice or waiver need specify the business scheduled for any board meeting and any business may be transacted at either a regular or special meeting.

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- 3. Five directors shall constitute a quorum for the transaction of business, except that any directorship not filled at the annual meeting and any vacancy, however caused, occurring in the board may be filled by the affirmative vote of a majority of the remaining directors even though less than a quorum of the board, or by a sole remaining director. At any meeting of the board, whether or not a quorum is present, a majority of those present may adjourn the meeting. Notice of an adjourned meeting need not be given if the time and place are fixed at the meeting adjourning and if the period of adjournment does not exceed ten days in any one adjournment.
- 4. (a) The provisions of this Section 4 of Article II shall be operative during any emergency in the conduct of the business of the corporation resulting from an attack on the United States or any nuclear or atomic disaster or from the imminent threat of such an attack or disaster. For the purpose of this Section 4 of Article II, such an emergency is defined as any period following (1) an enemy attack on the continental United States or any nuclear or atomic disaster as a result and during the period of which the means of communication or travel within the continental United States are disrupted or made uncertain or unsafe, or (ii) a determination as herein provided that such an attack or disaster is imminent or has occurred. The commencement and termination of the period of any such emergency may be determined by the chairman of the board or, in the event of the death, absence or disability of the chairman of the board, by the president, or in the event of the death, absence or disability of both the chairman of the board and the president, by such person or persons as the board of directors may from time to time designate, but in the absence of such specific designation, by the senior vice president who has been designated

pursuant to the authority of Section 6 of Article IV of these by-laws to exercise the powers and perform the duties of the chairman of the board and the president. To the extent not inconsistent with the provisions of this Section 4 of Article II, the by-laws in their entirety shall remain in effect during any such emergency.

- (b) Before or during any such emergency, the board may change the head office or designate several alternative head offices or regional offices, or authorize the officers to do so, said change to be effective during the emergency.
- (c) The officers or other persons designated by title in a list approved by the board before or during the emergency, all who are known to be alive and available to act in such order of priority and subject to such conditions and for such period of time, not longer than reasonably necessary after the termination of the emergency, as may be provided in the resolution of the board approving the list, shall, to the extent required to provide a quorum at any meeting of the board, be deemed and shall have all the powers of directors for such meeting. Unless so designated, an officer who is not a director shall not be deemed a director for the foregoing purpose.
- (d) Meetings of the board may be called by any officer or director or in the absence of all officers and directors by any person designated in a list approved by the board pursuant to subsection (c) of this Section 4. Any such meeting shall be held on such date and at such time and place as may be designated in the notice of the meeting. Notice of any such meeting need be given only to such of the directors as it may be feasible to reach

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at the time and such of the persons designated in such list as is considered advisable in the judgment of the person calling the meeting. Any such notice may be transmitted in person, in writing, or by telephone, telegram, cable or radio, or by such other means as may be feasible at the time, shall be effective whether or not actually received and shall be given at such time in advance of the meeting as, in the judgment of the person calling the meeting, circumstances negmit

- (e) Three directors shall constitute a quorum for the transaction of business.
- (f) Before or during any such emergency, the board by resolution may (i) appoint one or more committees in addition to or in substitution for one or more of those appointed pursuant to the provisions of Article III of these by-laws to act during such emergency and (ii) take any of the actions listed in Section of Article III of these by-laws in regard to any committee established pursuant to (i) of this subsection (f). Each such committee shall have at least three members, none of whom need be a director. To the extent provided in such resolution, each such committee shall have and may exercise all the authority of the board, except that no such committee shall take the action which Section 1 of Article III of these by-laws prohibits committees of the board to take.
- (g) Before or during any such emergency, the board may provide and from time to time modify, lines of succession in the event that during such an emergency any or all officers or agents of the corporation or any or all members of any committee of the board shall for any reason be rendered incapable of discharging their duties.
- (h) No officer, director or employee acting in accordance with this Section 4 of Article II shall be liable except for willful misconduct. No officer, director or employee shall be liable for any action taken in good faith in such an emergency in furtherance of the ordinary business affairs of the corporation even though not authorized by the by-laws then in effect.
- (i) Persons may conclusively rely upon a determination made pursuant to subsection (a) of this Section 4 that an emergency as therein defined exists regardless of the correctness of such determination.
- 5. No contract or other transaction between the corporation and one or more of its directors or between the corporation and any other corporation, firm or association of any type or kind in which one or more of its directors are directors or are otherwise interested, shall be void or voidable solely by reason of such common directorship or interest. Or solely because such director or directors are present at the meeting of the board or a committee thereof which authorizes or approves the contract or transaction, or solely because such director's or directors' votes are counted for such purpose, if (a) the contract or other transaction is fair and reasonable as to this corporation at the time it is authorized, approved or ratified, or (b) the fact of the common directorship or interest is disclosed or known to the board or committee and the board or committee authorizes, approves or ratifies the contract or transaction by unanimous written consent, provided at least one director so consenting is disinterested, or by affirmative vote of a majority of the disinterested directors, even though the disinterested directors be less than a quorum.

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or (c) the fact of the common directorship or interest is disclosed or known to the shareholders and they authorize, approve or ratify the contract or transaction.

ARTICLE III

Committees of the Board

1. The board, by resolution adopted by a majority of the entire board, may appoint from among its members an executive committee and one or more other committees, each of which shall have at least three members. To the extent provided in such resolution, each such committee shall have and may exercise all the authority of the board, except that no such committee shall (a) make, alter or repeal any by-law of the corporation: (b) elect any director, or remove any

officer or director; (c) submit to shareholders any action that requires shareholders' approval; or (d) amend or repeal any resolution theretofore adopted by the board which by its terms is amendable or repealable only by the board.

- 2. The board, by resolution adopted by a majority of the entire board, may (a) fill any vacancy in any such committee; (b) appoint one or more directors to serve as alternate members of any such committee, to act in the absence or disability of members of any such committee with all the powers of such absent or disabled members; (c) abolish any such committee at its pleasure; (d) remove any director from membership on such committee at any time, with or without cause; and (e) establish as a quorum for any such committee less than a majority of the entire committee, but in no case less than the greater of two persons or one-third of the entire committee.
- Actions taken at a meeting of any such committee shall be reported to the board at its next meeting following such committee meeting; except that, when the meeting of the board is held within two days after the committee meeting, such report shall, if not made at the first meeting, be made to the board at its second meeting following such committee meeting.

ARTICLE IV

Officers

- The board of directors at the organization meeting on the day of the annual election of directors shall elect a chairman of the board, a president, one or more vice presidents as the board may determine, any one or more of whom may be designated as executive vice president or as senior vice president or in such special or limiting style as the board may determine, a secretary, a treasurer, a controller, a general counsel, and a general tax counsel. The chairman of the board and the president shall each be a director, but the other officers need not be members of the board.
- The board of directors may from time to time elect, or authorize an officer of the corporation to appoint in writing, assistant secretaries, assistant treasurers, assistant controllers, and such other officers as the board may designate.

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- 3. All officers of the corporation, as between themselves and the corporation, shall have such authority and perform such duties in the management of the corporation as may be provided in these by-laws, or as may be determined by resolution of the board not inconsistent with these by-laws.
- 4. The chairman of the board shall be chief executive officer of the corporation and shall preside at all meetings of shareholders and directors. Subject to the board of directors, the chairman of the board shall have general care and supervision of the business and affairs of the corporation. In the absence of the president, the chairman of the board shall exercise the powers and perform the duties of the president.
- 5. The president shall, subject to the board of directors, direct the current administration of the business and affairs of the corporation. In the absence of the chairman of the board, the president shall preside at meetings of the shareholders and directors and exercise the other powers and duties of the chairman.
- 5. In the event of the death, absence, or disability of the chairman of the board and the president, a senior vice president may be designated by the board to exercise the powers and perform the duties of those offices.
- 7. The secretary shall give notice of all meetings of the shareholders and of the board of directors. The secretary shall keep records of the votes at elections and of all other proceedings of the shareholders and of the board. The secretary shall have all the authority and perform all the duties normally incident to the office of secretary and shall perform such additional duties as may be assigned to the secretary by the board, the chairman of the board or the president.

The assistant secretaries shall perform such of the duties of the secretary as may be delegated to them by the secretary.

8. The treasurer shall be the principal financial officer of the corporation. The treasurer shall have charge and custody of all funds and securities of the corporation; receive and give receipts for monies paid to the corporation, and deposit such monies in the corporation's name in such banks or other depositories as shall be selected for the purpose; and shall cause money to be paid out as the corporation may require. The treasurer shall have all the authority and perform all the duties normally incident to the office of treasurer and shall perform such additional duties as may be assigned to the treasurer by the board of directors, the chairman of the board or the president.

The assistant treasurers shall perform such of the duties of the treasurer as may be delegated to them by the treasurer.

9. The controller shall be the principal accounting and financial control officer of the corporation. The controller shall be responsible for the system of financial control of the corporation, including internal audits, the maintenance of its accounting records, and the preparation of the corporation's financial statements. The controller shall periodically inform the board of directors of the corporation's financial results and position. The controller shall have all the authority and perform all the duties normally incident to the office of controller and shall perform such

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additional duties as may be assigned to the controller by the board of directors, the chairman of the board or the president.

The assistant controllers shall perform such of the duties of the controller as may be delegated to them by the controller.

- 10. The general counsel shall advise the board of directors and officers on legal matters, except those relating to taxes. The general tax counsel shall advise the board of directors and officers on legal matters relating to taxes. Each shall perform such additional duties as may be assigned to either of them by the board of directors, the chairman of the board or the president.
- 11. Any vacancy occurring among the officers, however caused, may be filled by the board of directors except that any vacancy in the office of an assistant secretary, assistant treasurer or assistant controller appointed by an officer of the corporation may be filled by the officer, if any, then authorized by the board to make appointments to such office.
- 12. Any officer may be removed by the board with or without cause, and any assistant secretary, assistant treasurer or assistant controller appointed by an officer of the corporation may be removed with or without cause by the officer, if any, then authorized by the board to make appointments to such office.

ARTICLE V

Divisions and Division Officers

- The board of directors may from time to time establish one or more divisions
 of the corporation and assign to such divisions responsibilities for such of the
 corporation's business, operations and affairs as the board may designate.
- 2. The board of directors may appoint or authorize an officer of the corporation to appoint in writing officers of a division. Unless elected or appointed an officer of the corporation by the board of directors or pursuant to authority granted by the board, an officer of a division shall not as such be an officer of the corporation, except that such person shall be an officer of the corporation for the purposes of executing and delivering documents on behalf of the corporation or for other specific purposes, if and to the extent that such person may be authorized to do so by the board of directors. Unless otherwise provided in the writing appointing an officer of a division, such person's term of office shall be for one year and until that person's successor is appointed and qualified. Any officer of a division may be removed with or without cause by the board of directors or by the officer, if any, of the corporation then authorized by the board of directors to appoint such officer of a division.
- The board of directors may prescribe or authorize an officer of the corporation or an officer of a division to prescribe in writing the duties and powers and authority of officers of divisions.

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ARTICLE VI

Transfer of Shares

- Shares of the corporation shall be transferable on the records of the corporation in accordance with the provisions of Chapter 8 of the Uniform Commercial Code (New Jersey Statutes 12A:8-101 et seq.), as amended from time to time, except as otherwise provided in the New Jersey Business Corporation Act (New Jersey Statutes 14A:1-1 et seq.).
- In the case of lost, destroyed or wrongfully taken certificates, transfer shall be made only after the receipt of a sufficient indemnity bond, if required by the board of directors, and satisfaction of other reasonable requirements imposed by the board.
- 1. The board of directors may from time to time appoint one or more transfer agents and one or more registrars of transfers. All share certificates shall bear the signature, which may be a faceimile, of a transfer agent and of a registrar. The functions of transfer agents and registrars shall conform to such regulations as the board may from time to time prescribe. The board may at any time terminate the appointment of any transfer agent or registrar.

ARTICLE VII

Fiscal Year

The fiscal year of the corporation shall be the calendar year.

ARTICLE VIII

Corporate Seal

- The corporate seal is, and until otherwise ordered by the board of directors shall be, a circle containing the words "EXXON MOBIL CORPORATION, CORPORATE SEAL, 1882, NEW JERSEY" and may be an impression thereof or printed or other facsimile reproduction.
- The impression of the seal may be made and attested by either the secretary or an assistant secretary for the authentication of contracts and other papers requiring the seal.

ARTICLE IX

Amendments

The board of directors shall have the power to make, alter and repeal the by-laws of the corporation, but by-laws made by the board may be altered or repealed, and new by-laws made, by the shareholders.

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ARTICLE X

Indemnification

- 1. The corporation shall indemnify to the full extent from time to time permitted by law any director or former director or officer or former officer made, or threatened to be made, a party to, or a witness or other participant in, any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative, arbitrative, legislative, investigative, or of any other kind, by reason of the fact that such person is or was a director, officer, employee or other corporate agent of the corporation or any subsidiary of the corporation or serves or served any other enterprise at the request of the corporation (including service as a fiduciary with respect to any employee benefit plan of the corporation or any subsidiary of the corporation against expenses (including attorneys' fees), judgments, fines, penalties, excise taxes and amounts paid in settlement, actually and reasonably incurred by such person in connection with such action, suit or proceeding, or any appeal therein. No indemnification pursuant to this Article X shall be required with respect to any settlement or other nonadjudicated disposition of any threatened or pending action or proceeding unless the corporation has given its prior consent to such settlement or other disposition.
- 2. As any of the foregoing expenses are incurred, they shall be paid by the corporation for the director or former director or officer or former officer in advance of the final disposition of the action, suit or proceeding promptly upon receipt of an undertaking by or on behalf of such person to repay such payments if it shall ultimately be determined that such person is not entitled to be indemnified by the corporation.
- The foregoing indemnification and advancement of expenses shall not be deemed exclusive of any other rights to which any person indemnified may be entitled.
- 4. The rights provided to any person by this Article X shall be enforceable against the corporation by such person, who shall be presumed to have relied upon it in serving or continuing to serve as a director or in any of the other capacities set forth in this Article X. No elimination of or amendment to this Article X shall deprive any person of rights hereunder arising out of alleged or actual occurrences, acts or failures to act occurring prior to notice to such person of such elimination or amendment. The rights provided to any person by this Article X shall inure to the benefit of such person's legal representative.

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EXHIBIT 10(iii) (a)

EXXON CORPORATION

1993 INCENTIVE PROGRAM

Adopted by shareholders April 28, 1991 (as last amended January 26, 2000)

General Provisions

I. Purpose.

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The 1993 Incentive Program is intended to help maintain and develop strong management through ownership of shares of the Corporation by key employees of the Corporation and certain of its affiliates and through incentive awards for recognition of efforts and accomplishments which contribute materially to the success of the Corporation's business interests.

II. Definitions.

In this Program, except where the context otherwise indicates, the following definitions apply:

- (1) 'Administrative authority' means one of the following, as appropriate in accordance with Section III: the Board; any committee to which the Board delegates authority to administer this Program; or, in individual cases, the Chairman of the Board or persons acting under his direction.
- (2) 'Affiliate' means (a) any subsidiary and (b) any other corporation, partnership, joint venture, or other entity in which the Corporation, directly or indirectly, owns an equity interest and which the administrative authority deems to be an affiliate for purposes of this Program (including, without limitation, for purposes of determining whether a change of employment constitutes a termination).
- (3) 'Award' means a stock option, stock appreciation right ('SAR'), restricted stock, performance award, incentive share, dividend equivalent right ('DER'), or other award under this Program.
 - (4) 'Board' means the Board of Directors of the Corporation.
- (5) 'Board Compensation Committee,' hereinafter sometimes called the 'BCC,' means the committee of the Board so designated in accordance with Section IV.
 - (6) 'By the grant' means by the action of the granting authority at

the time of the grant of an award hereunder, or at the time of an amendment of the grant, as the case may be. ${\tt <PAGE>}$

- $\ensuremath{(7)}$ 'Code' means the Internal Revenue Code, as in effect from time to time.
 - (8) 'Corporation' means Exxon Corporation, a New Jersey corporation.
- (9) 'Designated beneficiary' means the person designated by the grantee of an award hereunder to be entitled, on the death of the grantee, to any remaining rights arising out of such award. Such designation must be made in writing and in accordance with such regulations as the administrative authority may establish.
- (10) 'Detrimental activity' means activity that is determined in individual cases by the administrative authority to be detrimental to the interests of the Corporation or any affiliate.
- (11) 'Dividend equivalent right,' herein sometimes called a 'DER,' means the right of the holder thereof to receive, pursuant to the terms of the DER, credits based on the cash dividends that would be paid on the shares specified in the DER if such shares were held by the grantee, as more particularly set forth in Section XIV(1).
- (12) 'Effectively granted' means, for purposes of determining the number of shares subject to an outstanding award under this Program, the number of shares subject to such award or the number of shares with respect to which the value of such award is measured, as applicable. An option that includes an SAR shall be considered a single award for this purpose.
- (13) 'Effectively issued' means the gross number of shares purchased, issued, delivered, or paid free of restrictions upon the exercise, settlement, or payment of an award, or lapse of restrictions thereon, as the case may be.
- (14) 'Bligible employee' means an employee of the Corporation or a subsidiary who is a director or officer, or in a managerial, professional, or other key position as determined by the granting authority.
 - (15) Employee' means an employee of the Corporation or an affiliate.
- (16) 'Exchange Act' means the Securities Exchange Act of 1934, as amended from time to time.
- (17) 'Pair market value' in relation to a share as of any specific time shall mean such value as reported for stock exchange transactions determined in accordance with any applicable regulations of the administrative authority in effect at the relevant time.
 - (18) 'Grantee' means a recipient of an award under this Program.
- (19) 'Granting authority' means the Board or any appropriate committee authorized to grant and amend awards under this Program in accordance with Section V and to exercise other powers of the granting authority hereunder.

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- (20) 'Incentive shares' means an award of shares granted pursuant to Section \mathbf{XIII} .
- (21) 'Incentive Stock Option.' herein sometimes called an 'ISO.' means a stock option meeting the requirements of Section 422 of the Code or any successor provision.
- (22) 'Performance award' means an award of shares, or of units or rights based on, payable in, or otherwise related to shares, granted pursuant to Section XII.
- (23) 'Performance period' means any period specified by the grant of a performance award during which specified performance criteria are to be measured.
- (24) 'Reporting person' means a person subject to the reporting requirements of Section 16(a) of the Exchange Act with respect to equity securities of the Corporation.
- (25) 'Restricted stock' means any share issued with the restriction that the holder may not sell, transfer, pledge, or assign such share and such other restrictions (which may include, but are not limited to, restrictions on the right to vote or receive dividends) which may expire separately or in combination, at one time or in installments, all as specified by the grant.
- (26) 'Rule 16b-3' means Rule 16b-3 (or any successor thereto) under the Exchange Act that exempts transactions under employee benefit plans, as in effect from time to time.
- (27) 'Share' means a share of Common Stock of the Corporation issued and reacquired by the Corporation or previously authorized but unissued.
- (28) 'Shareholder-approved plan' means any of the plans constituting parts of any of the Incentive Programs previously approved by shareholders of the Corporation.
- (29) 'Stock appreciation right,' herein sometimes called an 'SAR.' means the right of the holder thereof to receive, pursuant to the terms of the SAR, a number of shares or cash or a combination of shares and cash, based on the increase in the value of the number of shares specified in the SAR, as more particularly set forth in Section X.
- (30) 'Subsidiary' means a corporation, partnership, joint venture, or other entity in which the Corporation, directly or indirectly, owns a 50%

or greater equity interest

(31) "Terminate" means cease to be an employee for any reason, except by death, but a change of employment from the Corporation or one affiliate to another affiliate or to the Corporation shall not be considered a termination. For purposes of this Program, the administrative authority may determine that the time or date of termination is the day an

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employee resigns, accepts employment with another employer or otherwise indicates an intent to resign, which time or date need not necessarily be the last day on the payroll.

- (32) 'Terminate normally' for purposes of this Program means terminate
 - (a) at normal retirement time for that employee, or
- (b) with written approval of the administrative authority given in the context of recognition that all or a specified portion of the outstanding awards to that employee will not expire or be forfeited or annualed because of such termination.
- (33) 'Year' means calendar year.

III. Administration.

- (1) The Board is the ultimate administrative authority for this Program, with the power to conclusively interpret its provisions and decide all questions of fact arising in its application. The Board may delegate its authority pursuant to any provision of this Program to a committee which, except in the case of the BCC, need not be a committee of the Board. Subject to the authority of the Board or an authorized committee and excluding cases involving the Chairman as grantee, the Chairman of the Board and persons acting under his direction may serve as the administrative authority under this Program for purposes of making determinations and interpretations in individual cases.
- (2) The Board and any committee acting as the administrative authority under this Program can act by regulation, by making individual determinations, or by both. The Chairman of the Board and persons designated by him can act as the administrative authority under this Program only by making individual determinations.
- (3) All determinations and interpretations pursuant to the provisions of this Program shall be binding and conclusive upon the individuals involved and all persons claiming under them.
- (4) With respect to reporting persons, transactions under this Program are intended to comply with all applicable conditions of Rule 16b-3. To the extent any provision of this Program or any action by an authority under this Program fails to so comply, such provision or action shall, without further action by any person, be deemed to be automatically amended to the extent necessary to effect compliance with Rule 16b-3, provided that if such provision or action cannot be amended to effect such compliance, such provision or action shall be deemed null and void, to the extent permitted by law and deemed advisable by the appropriate authority. Each award to a reporting person under this Program shall be deemed issued subject to the foregoing qualification.
- (5) An award under this Program is not transferable except, as provided in the award, by will or the laws of descent and distribution, and is not subject to attachment, execution, or levy of any kind. The designation by a grantee of a designated beneficiary shall not constitute a transfer.

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(6) Any rights with respect to an award granted under this Program existing after the grantee dies are exercisable by the grantee's designated beneficiary or, if there is no designated beneficiary, by the grantee's personal

(7) Except as otherwise provided herein, a particular form of award may be granted to an eligible employee either alone or in addition to other awards hereunder. The provisions of particular forms of award need not be the same with respect to each recipient.

- (8) If the administrative authority believes that a grantee (a) may have engaged in detrimental activity or (b) may have accepted employment with another employer or otherwise indicated an intent to resign, the authority may suspend the exercise, vesting or settlement of all or any specified portion of such grantee's outstanding awards pending an investigation of the matter.
- (9) This Program and all action taken under it shall be governed by the laws of the State of New York.
- (10) Any award which was granted under a shareholder-approved plan and is still outstanding shall be interpreted and administered in accordance with the definitions and administrative provisions of this Program, including, without limitation, Sections II through V hereof.
- IV. Board Compensation Committee (BCC) .

The Board shall appoint a BCC. The BCC shall consist of two or more members of the Board, each of whom is a 'nonemployee director' within the meaning of Rule 16b-3. No award may be granted to a member of the BCC.

V. Right to Grant Awards: Reserved Powers.

The Board is the ultimate granting authority for this Program, with the power to select eligible employees for participation in this Program and to make all decisions concerning the grant or amendment of awards. The Board may delegate such authority in whole or in part (1) in the case of reporting

persons, to the BCC and (2) in the case of eligible employees who are not reporting persons, to any committee.

VI. Term

The term of this Program begins on the date shareholder approval of this Program is obtained and ends on the tenth anniversary of that date.

VII. Awards Grantable.

(1) Subject to the provisions of this Frogram, an award is grantable if, should it be granted, the total number of shares effectively granted during the year of the grant would not exceed seven tenths of one percent (0.7%) of the total number of shares of Common Stock of the Corporation outstanding (excluding shares held by the Corporation) on December 31 of the preceding year.

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- (2) If the total number of shares effectively issued with respect to an award is less than, or exceeds, the number of shares deemed effectively granted with respect to such award, the balance of such shares shall be, respectively, added to, or subtracted from, the maximum number of shares that may be effectively granted as awards thereafter.
- (3) If the total number of shares effectively granted as awards in any year is less than the maximum number of shares that could have been so granted pursuant to the provisions of this Program, the balance of such unused shares shall be added to the maximum number of shares that may be effectively granted as awards in the following year.
- (4) In addition to the foregoing, shares surrendered to the Corporation in payment of the exercise price or applicable taxes upon exercise or settlement of an award may also be used thereafter for additional awards.
- (5) Notwithstanding the foregoing provisions of this Section VII, the total number of shares that may be effectively granted under stock options or stock appreciation rights to any one grantee in any one calendar year may not exceed two tenths of one percent (0.2%) of the total number of shares of Common Stock of the Corporation outstanding (excluding shares held by the Corporation) on December 31, 1996; provided, that such number of shares is doubled in accordance with Section VIII to reflect a two-for-one split of the shares on March 14, 1997.

VIII. Adjustments.

Whenever a stock split, stock dividend, or other relevant change in capitalization which the administrative authority determines to be dilutive to outstanding awards occurs.

- the number of shares that can thereafter be obtained under outstanding awards and the purchase price per share, if any, under such awards, and
- (2) every number of shares used in determining whether a particular award is grantable thereafter,

shall be appropriately adjusted.

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IX. Stock Options.

One or more grantable stock options can be granted to any eligible employee. Each stock option so granted shall be subject to such terms and conditions as the granting authority shall impose, which shall include the following:

- (1) The exercise price per share shall be specified by the grant, but shall in no instance be less than 100 percent of fair market value at the time of grant. Payment of the exercise price shall be made in cash, shares, or other consideration in accordance with the terms of this Program and any applicable regulations of the administrative authority in effect at the time and valued at fair market value on the date of exercise of the stock option.
- (2) A stock option shall become exercisable, if at all, at the time or times specified by the grant. If the grantee terminates other than normally before a stock option or portion thereof becomes exercisable, that stock option or portion thereof shall be forfeited and shall never become exercisable. Except as otherwise specified by the grant, a stock option shall become immediately exercisable in full upon the death of the grantee.
- (3) Any stock option or portion thereof that is exercisable is exercisable for the full amount or for any part thereof, except as otherwise provided by the grant.
- (4) Each stock option ceases to be exercisable, as to any share, when the stock option is exercised to purchase that share, or when a related SAR is exercised either by the holder or automatically in accordance with its terms, or when the stock option expires. To the extent an SAR included in a stock option is exercised, such stock option shall be deemed to have been exercised and shall not be deemed to have expired.
- (5) A stock option or portion thereof that is exercisable shall expire in the following situations:
 - (a) unless clauses (b), (c) or (d) below apply, it shall expire at the earlier of:
 - (i) ten years after it is granted, or

- (ii) any earlier time specified by the grant;
- (b) if the grantee terminates, but does not terminate normally, it shall expire at the time of termination;
- (c) if the grantee is determined to have engaged in detrimental activity, it shall expire as of the date of such determination; or
 - (d) if the grantee dies, it shall expire at the earlier of
 - (i) five years after the grantee's death, or

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(ii) any earlier time specified by the grant;

but, in any case, no later than ten years after it is granted.

- (5) If a grantee terminates other than normally, (a) the administrative authority may refuse to deliver shares in settlement of any pending stock option exercise and (b) the granting authority may require the grantee to repay to the Corporation an amount equal to the spread on any stock option exercised by the grantee during the six-month period immediately preceding such termination. For purposes of the foregoing subsection (6) (b), 'spread' means the difference between the aggregate stock option exercise price and the fair market value of the underlying shares on the date such option is exercised.
- (7) All stock options granted hereunder are hereby designated as ISOs except to the extent otherwise specified by the grant and except to the extent otherwise specified in this Section IX(7). To the extent that the aggregate fair market value of shares with respect to which stock options designated as ISOs are exercisable for the first time by any grantee during any year (under all plans of the Corporation and any affiliate thereof) exceeds \$100,000, such stock options shall be treated as not being ISOs. The foregoing shall be applied by taking stock options into account in the order in which they were granted. For the purposes of the foregoing, the fair market value of any share shall be determined as of the time the stock option with respect to such share is granted. In the event the foregoing results in a portion of a stock option designated as an ISO exceeding the above \$100,000 limitation, only such excess shall be treated as not being an ISO.

For each year in which this Program is in effect, the number of shares that may be effectively granted as ISOs may not exceed seven tenths of one percent (0.7%) of the total number of shares of Common Stock of the Corporation outstanding (excluding shares held by the Corporation) on the pecember 31 preceding the date on which shareholder approval of this Program is obtained, provided, that beginning with the year 1998, the annual number of shares determined as aforesaid shall be doubled in accordance with Section VIII to reflect a two-for one split of the shares on March 14, 1997. If the number of shares effectively granted as ISOs in any year is less than the number of shares that could have been so granted pursuant to this paragraph, the balance of such unused shares may be added to the maximum number of shares that may be effectively granted as ISOs the following year.

A stock option designated as an ISO, or portion thereof, that fails or ceases to qualify as such under the Code shall otherwise remain valid according to its terms as a non-ISO under this Program.

X. Stock Appreciation Rights.

(1) An SAR may be granted to an eligible employee as a separate award hereunder. Any such SAR shall be subject to such terms and conditions as the granting authority shall impose, which shall include provisions that (a) such SAR shall entitle the holder thereof, upon exercise thereof in accordance with such SAR and the regulations of the administrative authority, to receive

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from the Corporation that number of shares having an aggregate value equal to the excess of the fair market value, at the time of exercise of such SAR, of one share over the exercise price per share specified by the grant of such SAR (which shall in no instance be less than 100 percent of fair market value at the time of grant) times the number of shares specified in such SAR, or portion thereof, which is so exercised, and (b) such SAR shall be exercisable, or be forfeited or expire, upon the same conditions set forth for freestanding options in Section IX. paragraphs (2), (3), (4), (5), and (6).

- (2) Any stock option granted under this Program may include an SAR, either at the time of grant or by amendment. An SAR included in a stock option shall be subject to such terms and conditions as the granting authority shall impose, which shall include provisions that (a) such SAR shall be exercisable to the extent, and only to the extent, the stock option is exercisable; and (b) such SAR shall entitle the optionee to surrender to the Corporation unexercised the stock option in which the SAR is included, or any portion thereof, and to receive from the Corporation in exchange therefor that number of shares having an aggregate value equal to the excess of the fair market value, at the time of exercise of such SAR, of one share over the exercise price specified in such stock option times the number of shares specified in such stock option, or portion thereof, which is so surrendered.
- (3) In lieu of the right to receive all or any specified portion of such shares, an SAR may entitle the holder thereof to receive the cash equivalent thereof as specified by the grant.
- (4) An SAR may provide that such SAR shall be deemed to have been exercised at the close of business on the business day preceding the expiration of such SAR or the related stock option, if any, if at such time such SAR has positive value and would have expired in accordance with the conditions set forth in

Section IX(5)(a).

XI Restricted Stock.

- (1) An award of restricted stock may be granted hereunder to an eligible employee, for no cash consideration, for such minimum consideration as may be required by applicable law, or for such other consideration as may be specified by the grant. The terms and conditions of restricted stock shall be specified by the grant.
- (2) Any restricted stock issued hereunder may be evidenced in such manner as the administrative authority in its sole discretion shall deem appropriate, including, without limitation, book-entry registration or issuance of a stock certificate or certificates. In the event any stock certificate is issued in respect of shares of restricted stock awarded hereunder, such certificate shall bear an appropriate legend with respect to the restrictions applicable to such award.
- (3) Except as otherwise specified by the grant, if a holder of record of restricted stock terminates, but does not terminate normally, all shares of restricted stock (whether or not stock certificates have been issued) then held by such holder and then subject to restriction shall be forfeited by such holder and reacquired by the Corporation. Except as otherwise specified by the grant, if a holder of record of restricted stock terminates normally or dies, any and all remaining restrictions with respect to such restricted stock shall expire. Notwithstanding the foregoing, if a

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holder of record of restricted stock is determined to have engaged in detrimental activity, all shares of restricted stock (whether or not stock certificates have been issued) then held by such holder and then subject to restriction shall be forfeited by such holder as of the date of such determination and shall be reacquired by the Corporation.

XII. Performance Awards.

- (1) Performance awards may be granted hereunder to an eligible employee, for no cash consideration, for such minimum consideration as may be required by applicable law, or for such other consideration as may be specified by the grant. The terms and conditions of performance awards, which may include provisions establishing performance periods, performance criteria to be achieved during a performance period, and maximum or minimum settlement values, shall be specified by the grant.
- (2) Performance awards may be valued by reference to the value of Common Stock of the Corporation or according to any other formula or method. Performance awards may be paid in cash, shares, or other consideration, or any combination thereof. The extent to which any applicable performance criteria have been achieved shall be conclusively determined by the administrative authority. Performance awards may be payable in a single payment or in installments and may be payable at a specified date or dates or upon attaining performance criteria.
- (3) Except as otherwise specified by the grant, if the grantee terminates, but does not terminate normally, any performance award or installment thereof not payable prior to the grantee's termination shall be annulled as of the date of termination. If the grantee is determined to have engaged in detrimental activity, any performance award or installment thereof not payable prior to the date of such determination shall be annulled as of such date.

XIII. Incentive Shares.

- (1) An incentive award may be granted hereunder in the form of shares. Incentive shares may be granted to an eligible employee for no cash consideration, for such minimum consideration as may be required by applicable law, or for such other consideration as may be specified by the grant. The terms and conditions of incentive shares shall be specified by the grant.
- (2) Incentive shares may be paid to the grantee in a single installment or in installments and may be paid at the time of grant or deferred to a later date or dates. Each grant shall specify the time and method of payment as determined by the granting authority, provided that no such determination shall authorize delivery of shares to be made later than the tenth anniversary of the grantee's date of termination. The granting authority, by amendment of the grant prior to delivery, can modify the method of payment for any incentive shares, provided that the delivery of any incentive shares shall be completed not later than the tenth auniversary of the grantee's date of termination.
- (3) If any incentive shares are payable after the grantee dies, such shares shall be payable (a) to the grantee's designated beneficiary or, if there is no designated beneficiary, to the grantee's

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personal representative, and (b) either in the form specified by the grant or otherwise, as may be determined by the administrative authority.

- (4) Any grant of incentive shares is provisional, as to any share, until delivery of the certificate representing such share. If, while the grant is provisional,
 - (a) the grantee terminates, but does not terminate normally, or
 - (b) the grantee is determined to have engaged in detrimental activity,

the grant shall be annulled as of the date of termination, or the date of such determination, as the case may be.

XIV. Dividend Equivalent Rights; Interest Equivalents.

- (1) A DER may be granted hereunder to an eligible employee, as a component of another award or as a separate award. The terms and conditions of DERS shall be specified by the grant. Dividend equivalents credited to the holder of a DER may be paid currently or may be deemed to be reinvested in additional shares (which may thereafter accrue additional dividend equivalents). Any such recinvestment shall be at fair market value at the time thereof. DERS may be settled in cash or shares or a combination thereof, in a single installment or installments. A DER granted as a component of another award may provide that such DER shall be settled upon exercise, settlement, or payment of, or lapse of restrictions on, such other award, and that such DER shall expire or be forfeited or annulled under the same conditions as such other award. A DER granted as a component of another award may also contain terms and conditions different from such other award.
- (2) Any award under this Program that is settled in whole or in part in cash on a deferred basis may provide by the grant for interest equivalents to be credited with respect to such cash payment. Interest equivalents may be compounded and shall be paid upon such terms and conditions as may be specified by the grant.

XV. Other Awards.

Other forms of award based on, payable in or otherwise related in whole or in part to shares may be granted to an eligible employee under this Program if the granting authority determines that such awards are consistent with the purposes and restrictions of this Program. The terms and conditions of such awards shall be specified by the grant. Such awards shall be granted for no cash consideration, for such minimum consideration as may be required by applicable law, or for such other consideration as may be specified by the grant.

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XVI. Amendments to This Program.

The Board can from time to time amend or terminate this Program, or any provision hereof, except that approval of the shareholders of the Corporation shall be required for any amendment (1) to increase the maximum number of shares that may be effectively granted as awards hereunder; (2) to decrease the minimum exercise price per share of a stock option or SAR; or (1) for which such approval is otherwise necessary to comply with any applicable law, regulation, or listing requirement, or to qualify for an exemption or characterization that is deemed desirable by the Board. An amendment of this Program shall, unless the amendment provides otherwise, be effective for all outstanding awards.

XVII. Amendments to Individual Awards.

without amending this Program, but subject to any requirements of applicable law or regulation, the granting authority may amend any one or more outstanding awards under this Program or any other shareholder-approved plan to incorporate in those awards any terms that could then be incorporated in a new award under this Program.

XVIII. Withholding Taxes.

The Corporation shall have the right to deduct from any cash payment made under this Program any federal, state or local income or other taxes required by law to be withheld with respect to such payment. It shall be a condition to the obligation of the Corporation to deliver shares or securities of the Corporation upon exercise of a stock option or SAR, upon settlement of a performance award or DER, upon delivery of restricted stock or incentive shares, or upon exercise, settlement, or payment of any other award under this Program, that the grantee of such award pay to the Corporation such amount as may be requested by the Corporation for the purpose of satisfying any liability for such withholding taxes, Any award under this Program may provide by the grant that the grantee of such award may elect, in accordance with any applicable regulations of the administrative authority, to pay a portion or all of the amount of such minimum required or additional permitted withholding taxes in shares. The grantee shall authorize the Corporation to withhold, or shall agree to surrender back to the Corporation, on or about the date such withholding tax liability is determinable, shares previously owned by such grantee or a portion of the shares that were or otherwise would be distributed to such grantee pursuant to such award having a fair market value equal to the amount of such required er permitted withholding taxes to be paid in shares.

XIX Grant of Awards to Employees Who are Foreign Nationals.

Without amending this Program, but subject to the limitations specified in Sections III(4) and XVI, the granting authority can grant or amend, and the administrative authority can administer, annul, or terminate, awards to eligible employees who are foreign nationals on such terms and conditions different from those specified in this Program as may in its judgment be necessary or desirable to foster and promote achievement of the purposes of this Program.

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*DESCRIPTION > EXECUTIVE LIFE INSURANCE AND DEATH BENEFIT PLAN

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EXHIBIT 10 (iii) (d)

EXXONMOBIL EXECUTIVE LIFE INSURANCE AND DEATH RENEFIT PLAN

Articles

- 2. Participation and Coverage
- Levels of Insurance Coverage Payment of Benefit
- Designation of Beneficiary Miscellaneous

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EXXONMOBIL EXECUTIVE LIFE INSURANCE AND DEATH BENEFIT PLAN

1. Participation

1.1 Covered Executive

Each covered executive is a participant in this Plan.

1:2 Retiree

(A) In General

Except as provided in paragraph (B) below, each person who becomes a retiree on or after the effective date, and who is a covered executive immediately prior to becoming a retiree is a participant in this Plan.

In addition, each grandfathered retiree is a participant in the Plan.

(B) Exception

A retiree will cease to be a participant during the time the retiree is a suspended retiree.

- 1.3 Cessation of Participant Status
 - (A) Termination of Employment

(1) In General

Except as provided in paragraphs (2) through (4) below, a covered executive will cease to be a participant 31 days after the covered executive terminates employment without becoming a

retiree.

(2) Exception for Long Term Disability

A covered executive who terminates employment with eligibility

for long-term disability benefits under the ExxonMobil Disability Plan, will cease to be a participant at the earlier of

(a) one year after terminating employment, or
 (b) the date the person is no longer eligible for long-term disability benefits on account of ceasing to be disabled.

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(3) Exception for Coverage Provided Through Death Benefit

If, at the time a covered executive terminates employment he or

she has elected to receive executive life coverage in the form of a death benefit, the covered executive will cease to be a

participant on the date of such termination of employment.

- (4) Exception for Transition Severance Terminees
 - (a) In General

A covered executive who terminates employment without

becoming a retiree shall continue to be a participant for a

period of one year from the date of such termination of employment, but only if the person is eligible for a benefit under the Exxon Transition Severance Plan, or if the Corporation, acting through its management, determines that the covered executive is otherwise eligible for such

continued participation.

(b) Termination of Provision

This paragraph (4) shall not apply to any covered executive who terminates employment after August 31, 2000.

(B) Suspended Retirees

A retiree or grandfathered retiree will cease to be a participant during the time the person is a suspended retiree.

2. Coverage

2.1 When and How Coverage is Provided

(A) In General

111 General

(1) Executive Life Coverage

Executive life coverage is automatically provided to all participants other than grandfathered retirees.

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(2) Supplemental Group Life Coverage

Supplemental group life coverage is automatically provided to all participants who are grandfathered retirees.

(B) Life Insurance or Death Benefit Option

(1) In General

Both executive life coverage and supplemental group life coverage is automatically provided under the Plan as life insurance unless a participant elects to receive coverage in the form of a death

benefit.

(2) Election

Participants may, at any time, elect to receive executive life or supplemental group life coverage, whichever is applicable, as a death benefit, and may revoke any such election. An election or revocation under this paragraph (2) shall be made in accordance with procedures established by the administrator.

(3) When Election is Effective

(a) Death Benefit

An election under paragraph (2) above to receive executive life or supplemental group life coverage as a death benefit shall become effective on the first of the month following the receipt of such election by the administrator.

(b) Revocation of Election

A participant's revocation of a death benefit election in

favor of receiving executive life or supplemental group life coverage as life insurance becomes effective on the first of the month following the date the administrator receives

notification from the insurer that the insurer has, in its

discretion, approved evidence of insurability submitted by the participant.

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(4) Reinstatement of Coverage

If a participant's executive life or supplemental group life

coverage is reinstated after a period in which the participant

was ineligible for coverage under section 1.3(B) above on account of becoming a suspended retiree, such coverage shall be

reinstated under the option (i.e., life insurance or a death benefit) in force at the time coverage was lost.

(C) Termination of Coverage

Executive life or supplemental group life coverage terminates for an individual on the date the individual ceases to be a participant.

2.2 Amount of Benefit

- (A) Executive Life Coverage
 - (i) In General

Except as provided in paragraph (2) below, the amount of executive life coverage in effect for a participant is equal to

the applicable percentage determined under the following chart multiplied by the participant's annual base pay:

If the participant's age is The percentage is
Under 65 400*

65-69 3504 75 and over

For this purpose, a participant attains a particular age as of

the first day of the month in which the person will turn such In addition, a covered executive's annual base pay is the

base pay in effect at the time coverage is determined, and a retiree's base pay is the base pay in effect for the person

immediately before the person became a retiree.

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(2) Transition Severance Terminees

The amount of executive life coverage in effect for a person who is a participant solely on account of section $1.3\,(h)\,(4)$ above

relating to transition severance terminees is 200% of the person's annual base pay in effect immediately before the person's termination of employment.

(B) Supplemental Group Life Coverage

- Supplemental Group Life Coverage is provided (1) during retirement to all grandfathered retirees, and
- (2) during employment to those persons who become grandfathered

retirees after the effective date.

The amount of supplemental group life coverage in effect for a grandfathered retiree is equal to the amount of coverage in effect for

the person under the provisions of the Supplemental Group Life Insurance Plan or Supplemental Group Death Benefit Plan (as such plans existed on December 31, 1999) as of the later of December 31, 1999 or the date the person retires. The amount of supplemental group life coverage in effect during employment for a person who becomes a grandfathered retiree after the effective date is the amount of

coverage to which they are entitled under the terms of the Supplemental Group Life Insurance Plan or Supplemental Group Death Benefit Plan (as such plans existed on December 31, 1999).

3. Payment of Benefit

3.1 Conditions for Payment of Benefit

If a participant dies while executive life or supplemental group life coverage for that participant is in effect, then the amount of coverage

then in effect for the

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participant becomes payable; provided, that proof of death satisfactory to

the insurer must be provided before any benefit becomes payable as life

insurance

3.2 Form of Payment

A benefit payable under Section 3.1 above upon a participant's death shall

be paid in a lump sum.

1.3 Source of Payment

(A) Life Insurance

Executive life and supplemental group life coverage in the form of life insurance shall be provided through one or more policies of insurance issued by an insurer selected by the Corporation, and any

executive life or supplemental group life benefit payable as insurance shall be paid pursuant to such policy or policies Death Benefit

Any executive life or supplemental group life benefit payable as a death benefit shall be paid from the general assets of the Corporation.

3.4 To Whom Paid

A benefit payable under Section 3.1 above upon a participant's death shall

- If a beneficiary designation is in effect at the time of the participant's death, the benefit shall be paid in accordance with such
- of the beneficiary designation is in effect, the benefit shall be paid to the first of the following groups that has at least one member that survives the participant:

- (1) The participant's spouse.
- (2) The participant's children. In this event, the benefit will be divided equally among the children who survive the participant as well as the children who die before the participant leaving children of their own who survive the participant. In the case of a participant's child who dies before the participant leaving children of his or her own

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who survive the participant, such child's share shall be divided

- equally among his or her surviving children.

 (3) The participant's parents. In this event, the benefit will be divided equally among the parents if they both survive the participant.
- (4) The participant's brothers and sisters. In this event, the benefit will be divided equally among the brothers and sisters who survive the participant as well as the brothers and sisters who die before the participant leaving children of their own who survive the participant. In the case of a brother or sister who dies before the participant leaving children of his or her own who survive the participant, such brother or sister's share shall
- be divided equally among his or her surviving children.

 (5) The participant's executors or administrators.

 For purposes of this Paragraph (B), a spouse of a participant shall include only someone who is the legal spouse of the participant, and a child, parent, brother, or sister of a participant shall include only someone who is a legitimate blood relative of the participant or whose relationship with the participant is established by virtue of a legal

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4. Designation of Beneficiary

4.1 Designation

A participant may designate one or more beneficiaries to receive the payment of benefits upon the death of the participant, or may at any time

change or cancel a previously made beneficiary designation. 2 Forms and Submission

4.2 Forms and Submission

adoption.

Any beneficiary designation or change or cancellation thereof shall be made on such forms and in such manner as is satisfactory to the insurer. No

beneficiary

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designation or change or cancellation thereof shall become effective until received by the insurer or its designated agent.

4.3 Designation Made Under Prior Plans

Any beneficiary designation made by a participant under the Supplemental

Group Life Insurance Plan or Supplemental Death Benefit Plan that remains in effect on December 31, 1999, shall continue to be valid under this Plan on and after the effective date until and unless properly superceded.

5. Miscellaneous

5.1 Plan Funding

The funding for executive life and supplemental group life coverage, including the funding of premiums under any life insurance policy issued in connection with such coverage, shall be paid for by the Corporation, no

participant contributions will be required or permitted.

5.2 Assignment of Insurance

(A) Assignment

A participant may assign to another owner the participant's interest

in his or her executive life or supplemental group life coverage provided in the form of life insurance. Such assignment shall be made on such forms and in such manner as is acceptable to the administrator

and the insurer

(B) Effect of Assignment

(1) in General

When an assignment of a participant's coverage is in effect as

described in paragraph (A) above, then, except as provided in paragraph (2) below, the participant's assignee shall have the

right to take all actions under the terms of this Plan with respect to such coverage that the participant would otherwise

have the right to

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take, including, without limitation, the right to designate a beneficiary.

An assignee shall not have the right under this Plan to elect to receive executive life or supplemental group life coverage as a death benefit under section $2.1(B)\left(2\right)$ above or to revoke an already existing election.

(C) Assignment Under Prior Plan

Any assignment of coverage made by a participant under the

Supplemental Group Life Insurance Plan shall continue to be valid under this Plan with respect to executive life and supplemental group

life coverage. 5.3 Amendment and Termination

The Corporation at any time, by action of any duly authorized officer, may

amend or terminate this Plan in whole or in part. 5.4 Responsibilities and Authority of Administrator

The administrator shall fulfill all duties and responsibilities of a *plan

administrator' required by the Employee Retirement Income Security Act of 1974, as amended. The administrator shall have the authority to control

and manage the operation and administration of this Plan, including, without limitation:

discretionary and final authority to determine eligibility and to administer this Plan in its application to each participant and (A) beneficiary; and

discretionary and final authority to interpret this Plan, in whole or in part, including but not limited to, exercising such authority in conducting a full and fair review, with such interpretation being conclusive for all participants and beneficiaries under this Plan.

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5.5 Claim Appeal Process

(A) Submission of Appeal

In the event a claim for benefits is denied, the claimant has the right to appeal to the administrator. A written request to review a

denied claim must be received by the administrator within 90 days

after the claim denial. The request may state the reasons the claimant believes he or she is entitled to Plan benefits, and may be accompanied by supporting information and documentation for the administrator's consideration.

(B) Decision

The administrator shall decide appeals in accordance with the

administrator's fiduciary authority set out in section 5.4 above.

Appeal decisions will be made within 60 days of the receipt of the claim by the administrator unless special circumstances warrant an

extension of time. If an extension of time is required, the administrator will notify the claimant of the extension. In all

cases, the decision will be made no later than 120 days after the receipt of the claim by the administrator. The appeal decision shall

be in writing, specify the reasons for the decision, and refer to the relevant Plan provision(s) on which the decision is based.

5.5 Definitions

(c) "Covered Employee" has the meaning set out in the ExxonMobil Benefit

Plans Common Provisions. (D) 'Covered Executive' means a covered employee who has a classification level of 35 or higher. 'Effective Date" means January 1, 2000. 'Grandfathered retiree" means a person who IPS «PAGE» (1) became a retiree prior to the effective date, and was covered under the Supplemental Group Life Insurance Plan or Supplemental Death Benefit Plan immediately prior to the effective date, or (2) becomes a retiree after the effective date after having been given the opportunity to elect and having elected continued coverage under the Supplemental Group Life Insurance Plan or Supplemental Death Benefit Plan. (G) "Insurer" means the insurance company that is the issuer of the policy of insurance described in section 3.3(A) above.

(B) "Participant" means a covered executive, retiree, or grandfathered retiree, as the context requires. (I) "Retiree" (1) In General "Retiree" has the meaning set out in the ExxonMobil Benefit Plans Common Provisions. (2) Transition Severance Cases (a) Treatment as Covered Annuitant Solely for purposes of this Plan, a person who is described in paragraph (b) below shall be treated as if he or she were a retiree. (b) Eligibility A person is described in this paragraph (b) if the person (i) terminates employment as a covered executive; (ii) is at least 50 years old by the end of the month in which the termination of employment occurs;
 (iii) has at least 10 years of benefit plan service (as defined in the ExxonMobil Benefit Plans Common Provisions) at the time of the termination of employment; and < PAGE> (iv) upon termination of employment receives a benefit under the Exxon Transition Severance Plan.
(c) Termination of Provision This paragraph (2) shall not apply to any person who fails to meet the eligibility requirements set out in paragraph (b) above on or before August 31, 2000. "Suspended retiree" (J) In General "Suspended Retiree" means a person who becomes a retiree by virtue of being incapacitated within the meaning of the ExxonMobil Disability Plan and commences long-term disability benefits under such Plan, but whose benefits under such Plan
thereafter cease by virtue of
(a) the person no longer being incapacitated, or
(b) the person's failure to report non-rehabilitative employment. Period A person remains a suspended retiree until the earlier of (1) the date the person attains age 55, or (2) the date the person commences his or her benefit or receives a lump-sum settlement under the ExxonMobil Pension Plan, at which time the person is again considered a retiree. 12

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<DESCRIPTION>SHORT TERM INCENTIVE PROGRAM

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EXHIBIT 10(iii)(e)

EXXON CORPORATION

SHORT TERM INCENTIVE PROGRAM (as last amended January 26, 2000)

I. Purpose. The Short Term Incentive Program is intended to help

maintain and develop strong management through incentive awards to key employees of the Corporation and certain of its affiliates for recognition of efforts and accomplishments which contribute materially to the success of the Corporation's business interests.

- II. Definitions. In this Program, except where the context otherwise indicates, the following definitions apply:
 - (1) 'Administrative authority' means one of the following, as appropriate in accordance with Section III: the Board; any committee to which the Board delegates authority to administer this Program; or, in individual cases, the Chairman of the Board or persons acting under his direction.
 - (2) 'Affiliate' means (a) any subsidiary and (b) any other corporation, partnership, joint venture, or other entity in which the Corporation, directly or indirectly, owns an equity interest and which the administrative authority deems to be an affiliate for purposes of this Program (including, without limitation, for purposes of determining whether a change of employment constitutes a termination).
 - (3) "Award" means a bonus, bonus unit, or other incentive award under this Program.
 - (4) "Board" means the Board of Directors of the Corporation.
 - (5) "Board Compensation Committee," hereinafter sometimes called the "BCC," means the committee of the Board so designated.
 - (6) 'Bonus' means an award granted under this Program which may be payable in cash or other consideration as specified by the grant.
 - (7) "Bonus unit" means an award granted under this Program to receive from the Corporation an amount of cash or other consideration not to exceed the maximum settlement value and based upon a measurement for valuation as specified by the grant. The term bonus unit includes, but is not limited to, earnings bonus units.
- (8) "By the grant" means by the action of the granting authority at the time of the grant of an award hereunder, or at the time of an amendment of the grant, as the case may be.
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 - (9) "Corporation" means Exxon Corporation, a New Jersey corporation.
 - (10) "Designated beneficiary" means the person designated by the grantee of an award hereunder to be entitled, on the death of the grantee, to any remaining rights arising out of such award. Such designation must be made in writing and in accordance with such regulations as the administrative authority may establish.
 - (11) "Detrimental activity" means activity that is determined in individual cases by the administrative authority to be detrimental to the interests of the Corporation or any affiliate.
 - (12) "Earnings bonus unit," hereinafter sometimes called an "EBU," means a bonus unit granting the right to receive from the Corporation at the settlement date specified by the grant, or at a later payment date so specified, an amount of cash equal to the Corporation's cumulative consolidated earnings per common share as reflected in its quarterly earnings statements as initially published commencing with earnings for the first full quarter following the date of grant to and including the last full quarter preceding the date of settlement, but the amount of such settlement shall not exceed the maximum settlement value specified by the grant.
 - (13) "Eligible employee" means an employee of the Corporation or a subsidiary who is a director or officer, or in a managerial, professional, or other key position as determined by the granting authority.
 - (14) "Employee" means an employee of the Corporation or an affiliate.
 - (15) "Grantee" means a recipient of an award under this Program.
 - (16) "Granting authority" means the Board or any appropriate committee authorized to grant and amend awards under this Program in accordance with Section V and to exercise other powers of the granting authority hereunder.
 - (17) "Reporting person" means a person subject to the reporting requirements of Section 16 with respect to equity securities of the Corporation.
 - (18) "Section 16" means Section 16 of the Securities Exchange Act of 1934, together with the rules and interpretations thereunder, as in effect from time to time.
 - (19) 'Subsidiary' means a corporation, partnership, joint venture, or other entity in which the Corporation. directly or indirectly, owns a 50% or greater equity interest.
 - (20) "Terminate" means cease to be an employee for any reason, except by death, but a change of employment from the Corporation or one affiliate to another affiliate or to the Corporation shall not be considered a termination. For purposes of this program, the administrative authority may determine that the time or date of termination is the day an

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employee resigns, accepts employment with another employer or otherwise indicates an intent to resign, which time or date need not necessarily be the last day on the payroll.

(21) "Terminate normally" for purposes of this Program means terminate

- (a) at normal retirement time for that employee, or
- (b) with written approval of the administrative authority given in the context of recognition that all or a specified portion of the outstanding awards to that employee will not expire or be forfeited or annulled because of such termination.
- (22) "Year" means calendar year.
- III. Administration.
- (1) The Board is the ultimate administrative authority for this Program, with the power to conclusively interpret its provisions and decide all questions of fact arising in its application. The Board may delegate its authority pursuant to any provision of this Program to a committee which, except in the case of the BCC, need not be a committee of the Board. Subject to the authority of the Board or an authorized committee and excluding cases involving the Chairman as grantee, the Chairman of the Board and persons acting under his direction may serve as the administrative authority under this Program for purposes of making determinations and interpretations in individual cases.
- (2) The Board and any committee acting as the administrative authority under this Program can act by regulation, by making individual determinations, or by both. The Chairman of the Board and persons designated by him can act as the administrative authority under this Program only by making individual determinations.
- (3) All determinations and interpretations pursuant to the provisions of this Program shall be binding and conclusive upon the individual employees involved and all persons claiming under them.
- (4) It is intended that this Program shall not be subject to the provisions of Section 16 and that awards granted hereunder shall not be considered equity securities of the Corporation within the meaning of Section 16. Accordingly, no award under this Program shall be payable in any equity security of the Corporation. In the event an award to a reporting person under this Program should be deemed to be an equity security of the Corporation within the meaning of Section 16, such award may, to the extent permitted by law and deemed advisable by the granting authority, be amended so as not to constitute such an equity security or be annulled. Each award to a reporting person under this Program shall be deemed issued subject to the foregoing qualification.

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- (5) An award under this Program is not transferable prior to payment or settlement except, as provided in the award, by will or the laws of descent and distribution, and is not subject, in whole or in part, to attachment, execution, or levy of any kind. The designation by a grantee of a designated beneficiary shall not constitute a transfer.
- (6) The grantee's designated beneficiary or, if there is no designated beneficiary, the grantee's personal representative shall be entitled to any remaining rights with respect to an award granted under this Program existing after the grantee dies.
- (7) Except as otherwise provided herein, a particular form of award may be granted to an eligible employee either alone or in addition to other awards hereunder. The provisions of particular forms of award need not be the same with respect to each recipient.
- (8) If the administrative authority believes that a grantee (a) may have engaged in detrimental activity or (b) may have accepted employment with another employer or otherwise indicated an intent to resign, the authority may suspend the delivery, vesting or settlement of all or any specified portion of such grantee's outstanding awards pending an investigation of the matter.
- (9) This Program and all action taken under it shall be governed by the laws of the State of New York.
- IV. Annual Ceiling. In respect to each year under the Program, the BCC shall, pursuant to authority delegated by the Board, establish a ceiling on the aggregate dollar amount that can be awarded hereunder. With respect to bonuses granted in a particular year under the Program, the sum of:
 - (1) the aggregate amount of bonuses in cash, and
 - (2) the aggregate maximum settlement value of bonuses in any form of bonus unit shall not exceed such ceiling.

The BCC may revise the ceiling as it deems appropriate.

- V. Right to Grant Awards; Reserved Powers. The Board is the ultimate granting authority for this Program, with the power to select eligible employees for participation in this Program and to make all decisions concerning the grant or amendment of awards. The Board may delegate such authority in whole or in part to a committee which, except in the case of the BCC, need not be a committee of the Board.
- VI. Term. The term of this Program begins on November 1, 1993 and shall continue until terminated by the Board.

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VII. Bonuses Grantable. A bonus is grantable in respect of any year to any eligible employee during such year if, should it be granted the aggregate amount of the bonuses granted in respect of that year will not exceed the ceiling established from time to time by the BCC. In this

connection, each bonus granted ceases to be effectively granted to the extent that the grant is annulled. No award may be granted to a member of the BCC.

- VIII. Form of Bonus. Subject to Section III(4), a grantable bonus can be granted to any eligible employee in respect of any year either wholly in cash, bonus units, or other consideration, or partly in two or more such forms.
- IX. Settlement of Bonuses. Each grant shall specify the time and method of settlement as determined by the granting authority, provided that no such determination shall authorize settlement to be made later than the tenth anniversary of the grantee's date of termination. Each grant, any portion of which is granted in bonus units, shall specify as the regular method of settlement for that portion a settlement date, which may be accelerated to an earlier time as specified by the grant, provided, however, whether or not the settlement date has been accelerated, payment of cash to the grantee to complete such settlement may be postponed, by the grant, so long as such payment is not postponed beyond the tenth anniversary of the grantee's date of termination. The granting authority, by amendment of the grant prior to payment or delivery, can modify any method of settlement of any bonus or portion thereof, provided that the settlement of any bonus shall be completed by the payment of any cash not later than the tenth anniversary of the grantee's date of termination.
- X. Installments Payable After Death. If any bonus or installment thereof is payable after the grantee dies, it shall be payable
 - to the grantee's designated beneficiary or, if there is no designated beneficiary, to the grantee's personal representative, and
 - (2) either in the form specified by the grant or otherwise, as may be determined in the individual case by the administrative authority.
- XI. Interest Equivalents, With respect to the relevant portion of a bonus granted in cash for delivery more than six months after the date of grant, there shall be credited to the grantee an amount equivalent to interest (which may be compounded) as specified by the grant with respect to the period beginning at the date of grant and ending on the date as specified by the grant. The rate of interest, if any, credited to the grantee shall be determined from time to time by the BCC.

With respect to the relevant portion of a bonus granted in bonus units the payment of cash in settlement of which is postponed more than six months after the settlement date, there shall be credited to the grantee an amount equivalent to interest (which may be

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compounded) as specified by the grant. The rate of interest, if any, credited to the grantee shall be determined from time to time by the BCC.

Such credits for interest equivalents shall not be included in any computation made for purposes of any ceiling established by the BCC pursuant to Section IV.

When a bonus in cash is paid, any interest equivalents so credited on the cash shall be paid. When a bonus in units is paid, any interest equivalents so credited on the units shall be paid.

- XII. Annulment of Grant. The grant of any bonus or portion thereof is provisional until cash or other consideration is paid in settlement thereof, except to the extent the granting authority shall have declared the bonus to be vested and nonforfeitable. If, While the grant is provisional,
 - (1) the grantee terminates but does not terminate normally, or
 - (2) the grantee is determined to have engaged in detrimental activity, the grant shall be annulled as of the time of termination, or the date such activity is determined to be detrimental, as the case may be.
- XIII. Amendments to this Program. The Board can from time to time amend or terminate this Program, or any provision hereof. An amendment of this Program shall, unless the amendment provides otherwise, be effective for all outstanding awards.
- XIV. Amendments to Awards. The granting authority may amend any outstanding award under this Program to incorporate any terms that could then be incorporated in a new award under this Program.
- XV. Withholding Taxes. The Corporation shall have the right to deduct from any cash payment made under this Program any federal, state or local income or other taxes required by law to be withheld with respect to such payment. In the case of a payment under this Program other than cash, the grantee will pay to the Corporation such amount of cash as may be requested by the Corporation for purpose of satisfying any liability for such withholding taxes.
- XVI. Grant of Awards to Employees Who Are Foreign Nationals. Without amending this Program, but subject to the limitations specified in Section III(4), the granting authority can grant or amend, and the administrative authority can administer, annul, or terminate, awards to eligible employees who are foreign nationals on such terms and conditions different from those specified in this Program as may in its judgment be necessary or desirable to foster and promote achievement of the purposes of this Program.

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<DOCUMENT>
  TYPESPY-12
  <DESCRIPTION>COMPUTATION OF RATIO OF EARNINGS TO FIXED CHARGES
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                                       EXXON MOBIL CORPORATION
                      COMPUTATION OF RATIO OF EARNINGS TO FIXED CHARGES
  <TABLE>
  <CAPTION>
                                                           Year Ended December 31,
                                                     1999
                                                                1998
                                                                            1997
                                                                                        1996
                                                                 (millions of dollars)
                                                             -00
                                                 «C»
                                                                        200
                                                                                    «C»
 Income before cumulative effect of accounting changes.

Excess/(shortfall) of dividends over earnings of affiliates owned less than 50 percent accounted for by the equity method.
                                                $ 7.910 $ 8.144 $11,732 $10,474 $ 8,846
                                                     300
                                                                                                      (26)
                                                                  164
                                                                              (64)
                                                                                          186
 Provision for income taxes(1)....
Capitalized interest.........
Minority interests in earnings of
                                                   3,632 (423)
                                                               4,390
                                                                           8,140
                                                                                       8,201
                                                                                                   6,572
                                                                                                    (465)
                                                                                        (467)
  consolidated subsidiaries.....
                                                     139
                                                                  261
                                                                              523
                                                                                         500
                                                                                                     392
                                                  11,558
                                                             12,559
                                                                          19,883
                                                                                      18,894
                                                                                                 15,319
 Fixed Charges: (1)
  Interest expense--borrowings....
                                                     826
                                                                  769
                                                                                                   1.096
  606
   interest factor.
                                                     617
                                                                 795
                                                                              818
                                                                                         819
                                                                                                     780
  Dividends on preferred stock....
                                                   2,057
                                                              2,134
                                                                           2,229
                                                                                       2.365
                                                                                                  2.460
Total adjusted earnings available for payment of fixed charges....
                                                $13.615
                                                                                    521 259
                                                                                                $17.779
 Number of times fixed charges are
(1) The provision for income taxes and the fixed charges include Exxon Mobil
Corporation's share of 50 percent owned companies and majority owned
subsidiaries that are not consolidated.
</TEXT>
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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

REVIEW OF 1999 RESULTS

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Earnings excluding merger expenses and special items were \$8,380 million, down \$426 million or 5 percent from 1998. Net income was \$7,910 million, down from \$8,074 million in 1998. The decline was primarily in the downstream (Refining and Marketing) where steeply rising crude oil costs could not be recovered in \$8,074 million in 1998. The decline was primarily in the downstream (Refining and Marketing) where steeply rising crude oil costs could not be recovered in the marketplace. Crude oil prices rose about \$14 per barrel from January to December 1999, depressing refining and marketing margins in all geographic areas. Weaker chemicals margins and lower coal prices also adversely affected earnings. However, upstream (Exploration and Production) results benefited from the increase in crude oil prices and partly offset the weakness in downstream business conditions. Record chemicals, coal and copper volumes and reduced expenses in every operating segment also benefited earnings. Results in 1999 included \$470 million of net charges for special items -- \$469 million of merger expenses with other special items essentially offseting. Results in 1998 included \$732 million of net special charges. Revenue for 1999 totaled \$186 billion, up 9 percent from 1998, and the cost of crude oil and product purchases increased 24 percent.

Excluding merger expenses, the combined total of operating costs (including operating, selling, general, administrative, exploration, depreciation and depletion expenses from the consolidated statement of income and ExxonMobil's share of similar costs for equity companies) in 1999 was \$44.3 billion, down about \$400 million from 1998. Base cash operating expenses, which exclude energy costs and depreciation, were down \$1.2 billion, as efficiency initiatives and high grading of exploration spending more than offset higher cash expenses from new business activity and inflation. Interest expense in 1999 was \$695 million, \$127 million higher than 1998, mainly due to a higher debt level and unfavorable

\$127 million higher than 1998, mainly due to a higher debt level and unfavorable foreign exchange effects.

Exploration and Production

Exploration and production earnings of \$5,886 million increased significantly Exploration and production earnings of \$5,886 million increased significantly from last year reflecting higher average crude oil prices, up over \$5 per barrel from 1998. Average U.S. natural gas prices were 9 percent higher than the prior year, while European gas prices, which are tied to petroleum product prices on a lagged basis, were about 17 percent lower. Liquids production of 2,517 kbd (thousands of barrels daily) was up 1 percent from 2,502 kbd in 1998 as production from new developments in the North Sea, the Gulf of Mexico, West Africa and the Caspian offset natural field declines in North America and lower liftings in Indonesia and Malacian Norths as production of 10,308 media Arrica and the Caspian offset natural field declines in North America and lower liftings in Indonesia and Malaysia. Natural gas production of 1,308 mcfd (millions of cubic feet daily) compared with 10,617 mcfd in 1998. Exploration and producing expenses were reduced from prior year levels. Earnings from U.S. exploration and production were \$1,842 million, up \$807 million after excluding \$185 million of special charges related mainly to property write-downs in 1998. Outside the U.S., exploration and production earnings were \$3,925 million, up \$1,247 million after excluding a \$141 million deferred tax benefit and a \$22 million property write-off in 1999 and \$176 million of other net special charges in 1998. in 1998

Refining and Marketing

Refining and marketing earnings of \$1,227 million declined from last year's strong results primarily reflecting escalating crude oil costs and weaker refining and marketing margins in all geographic areas. Unfavorable foreign exchange and inventory effects also reduced earnings. Higher volumes, mainly in the U.S., and lower operating expenses provided a partial offset. Petroleum product sales were 8,887 kbd compared with 8,873 kbd in 1998. Refinery throughput was 5,977 kbd compared with 6,093 kbd in 1998. In the U.S., refining and marketing earnings were \$577 million, down \$614 million from the prior year after excluding \$8 million of special credits related to inventory adjustments in 1998. Refining and marketing operations outside of the U.S. earned \$770 million, down \$1,917 million from 1998 after excluding special charges from both years. Results in 1999 included \$80 million of charges for non-merger related restructuring of Japanese refining and marketing operations and a \$40 million Refining and marketing earnings of \$1,227 million declined from last year's restructuring of Japanese refining and marketing operations and a \$40 million write-off associated with the cancellation of a power project in Japan, while 1998 results included \$412 million of special charges largely related to the impact of lower prices on inventories and Mobil-British Petroleum (BP) alliance implementation costs.

Chemicals

Earnings from chemicals operations totaled \$1,354 million, down \$40 million or 3 percent from 1998. Industry margins declined due to lower product prices and higher feedstock costs. Prime product sales volumes of 24,485 thousand metric tons were a record and increased 4 percent from 1998. Earnings also benefited from lower operating expenses. Chemicals' results included 59 million of special charges related to the impact of lower prices on inventories in 1998.

Earnings from other operating segments totaled \$426 million, an increase of \$42 million from 1998. The increase reflects record copper and coal production, lower operating expenses and favorable foreign exchange effects, partly offset by depressed coal prices.

Corporate and Financing

Corporate and financing expenses were \$514 million, \$54 million higher than 1998 which included a net special credit of \$112

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

million related to settlement of prior years' tax disputes. Excluding special items, expenses were \$58 million lower reflecting lower tax-related charges.

REVIEW OF 1998 RESULTS

Earnings excluding special items were \$8,806 million, down \$2,779 million or 24 percent from 1997. Net income was \$8,074 million, down \$3,658 million from \$11,732 million in 1997. The decline was driven by weaker crude oil prices, that on average were over \$6 per barrel or 33 percent lower than 1997. Average 1998 crude oil prices were at their lowest level in over twenty years, Earnings were also adversely affected by lower natural gas prices, weaker chemicals margins and depressed copper and coal prices. However, downstream operations achieved their second highest level of earnings ever in 1998, partly offsetting the weakness seen in the other operating segments. Additionally, results in 1998 included 5732 million of net special charges for the write-down of upstream properties, the impact of lower prices on inventories, the unfavorable impact of an accounting change, non-merger related restructuring provisions and implementation costs and other net charges, partially offset by the benefit resulting from the settlement of prior years' tax disputes. In 1997, results included 5147 million of net credits for special items. Of these, \$190 million were the result of foreign exchange impacts on deferred income tax liabilities. \$181 million were for gains on asset sales and \$115 million were U.S. tax related. These items were partly offset by various other special charges, mainly restructuring provisions and Mobil-BP alliance implementation costs. Revenue for 1998 totaled \$170 billion, down 16 percent from 1997, and the cost of crude and product purchases declined 26 percent.

The combined total of operating costs (including operating, selling, general, administrative, exploration, depreciation and depletion expenses from the costs of crude and \$2000 million devertion and depletion expenses from the costs of crude and \$2000 million and total of operating the expense of similar costs for

The combined total of operating costs (including operating, selling, general, administrative, exploration, depreciation and depletion expenses from the consolidated statement of income and ExxonNobil's share of similar costs for equity companies) in 1998 was \$44.7 billion, down \$1.5 billion from 1997. Lower operating costs resulted primarily from a stronger U.S. dollar, reduced energy costs and the de-consolidation of majority owned power companies in Bong Kong and China. Excluding these effects, ExxonMobil's operating efficiencies continued to offset the impact of inflation and new business activity growth. Interest expense in 1998 declined \$295 million to \$568 million, principally due to the deconsolidation of power companies mentioned above and favorable foreign exchange effects.

exchange effects.

During the fourth quarter of 1998, ExxonMobil de-consolidated the majority owned power companies in Hong Kong and China retroactive to January 1, 1998. Although ExxonMobil's 1998 net income was not affected by the de-consolidation, there were several impacts to the 1998 balance sheet (see note 9). These power companies are now accounted for as equity companies, since the minority shareholder in these companies has substantive participating management rights. These rights include the minority shareholder's approval of operating policies, expense budgets, financing and investment plans and management compensation and succession plans.

Exploration and Production

Exploration and production earnings of \$3,352 million declined substantially from 1997 reflecting crude prices that on average were over \$6 per barrel lower than 1997. Lower U.S. and international natural gas prices also adversely affected earnings. Liquids production was 2,502 kbd compared with 2,527 kbd in 1997. Lower production was mainly due to the fourth quarter Longford plant outage in Australia, limitations on production in Nigeria, along with natural field declines in macure areas. Partly offsetting these effects were increased Canadian heavy oil production, increased production from new developments in the North Sea. West Africa. Eastern Canada, Azerbaijan and Kazakhstan, and increased Malaysian output. Natural gas production of 10,617 mcfd was down 277 mcfd from 1997, mainly reflecting lower Indonesian volumes. Earnings from U.S. exploration and production were \$1,035 million, down \$1,259 million, after excluding special charges of \$165 million from 1998 and \$37 million of special credits from 1997. outside the U.S., exploration and production earnings were \$2,678 million, down \$1,669 million, after excluding \$176 million of special charges from 1998 and \$227 million of credits from 1997.

Refining and Marketing

Refining and marketing earnings increased \$386 million to \$3,474 million. Downstream industry margins in 1998 were generally higher than 1997. Buropean refining margins were stronger, but margins in the U.S. and Asia-Pacific were weaker. Marketing margins improved in most geographic areas, particularly in the U.S. Petroleum product sales of 8,873 kbd were up from 1997 despite the impact of weaker economic conditions in Asia-Pacific. Refinery throughput was 6,093 kbd compared with 6,234 kbd in 1997. In the U.S., refining and marketing earnings were \$1.291 million, up \$36 million from 1997, after excluding \$8 million of special credits in 1998 and \$20 million of charges in 1997. Refining and marketing operations outside the U.S. earned \$2,687 million, an increase of \$467 million, after excluding \$412 million of special charges in 1998 and \$267 million of charges in 1998 and \$267

Chemicals

Barnings from chemicals operations totaled \$1,394 million, down \$377 million or 21 percent from 1997. Chemicals margins declined during the year as the result of weaker industry commodity prices. Chemical prime product sales of 23,628 thousand metric tons were down slightly from 1997 as higher sales in North America and Europe were offset by lower demand in

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Asia-Pacific markets. Earnings in 1998 included \$9 million of special charges while 1997 results included \$53 million of special credits.

Other Operations

Earnings from other operating segments totaled \$384 million, a decrease of \$50 million from 1997, reflecting significantly lower copper prices, as well as lower international coal prices. The effect of lower prices was partly offset by record copper and coal production, lower operating expenses and favorable foreign exchange effects.

Corporate and Financing

Corporate and financing expenses were \$460 million, \$6 million lower than 1997. After excluding \$112 million of net special credits from 1998 and \$117 million from 1997, expenses decreased \$11 million.

MERGER OF EXXON CORPORATION AND MOBIL CORPORATION

On November 30, 1999, a wholly-owned subsidiary of Exxon Corporation (Exxon) merged with Mobil Corporation (Mobil) so that Mobil became a wholly-owned subsidiary of Exxon (the "Merger"). At the same time, Exxon changed its name to Exxon Mobil Corporation (ExxonMobil). Under the terms of the agreement, approximately 1.0 billion shares of ExxonMobil common stock were issued in exchange for all the outstanding shares of Mobil common stock based upon an exchange ratio of 1.32015. Following the exchange, former shareholders of Exxon owned approximately 70 percent of the corporation, while former Mobil shareholders owned approximately 30 percent of the corporation. Each outstanding share of Mobil preferred stock was converted into one share of a new class of ExxonMobil preferred stock.

As a result of the Merger, the accounts of certain refining, marketing and chemicals operations jointly controlled by the combining companies have been included in the consolidated financial statements. These operations were previously accounted for by Exxon and Mobil as separate companies using the squity method of accounting.

The Merger was accounted for as a pooling of interests. Accordingly, the consolidated financial statements give retroactive effect to the merger, with all periods presented as if Exxon and Mobil had always been combined.

In association with the merger between Exxon and Mobil, \$625 million pretax (\$469 million after-tax) of costs were recorded as merger related expenses. Charges included separation expenses related to workforce reductions (approximately 1,750 employees at year-end 1999) and merger closing costs. The reserve balance at year-end 1999 of approximately \$330 million is expected to be expended in 2000. Merger related expenses are expected to grow to approximately \$2.5 billion on a cumulative basis by 2002. Pre-tax operating synergies associated with the Merger, including cost savings and efficiency gains, are expected to reach \$3.8 billion per year by 2002.

Certain property -- primarily refining, marketing, pipeline and natural gas distribution assets -- must be divested as a condition of the regulatory approval of the Merger by the U.S. Pederal Trade Commission and the European Commission. These assets, with a carrying value of approximately \$3 billion, are expected to be sold in the year 2000. Before tax proceeds for these assets are expected to be in the range of \$4 to \$5 billion and should be received in 2000. The properties have historically earned approximately \$200 million per year.

REORGANIZATION COSTS

In the first quarter of 1999 the corporation recorded a \$120 million after-tax charge for the reorganization of Japanese refining and marketing operations in its wholly-owned Esso Sekiyu K.K. and 50.1 percent owned General Sekiyu K.K. affiliates. The reorganization resulted in the reduction of approximately 700 administrative, financial, logistics and marketing service employee positions. The Japanese affiliates recorded a combined charge of \$216 million (before tax) to selling, general and administrative expenses for the employee related costs. Substantially all cash expenditures anticipated in the restructuring provision have been paid as of the end of 1999. General Sekiyu also recorded a \$211 million (before tax) charge to depreciation and depletion for the write-off of costs associated with the cancellation of a power plant project at the Kawasaki terminal. Manpower reduction savings associated with this reorganization are anticipated to reach \$50 million per year after tax in 2000.

As indicated in note 5, during 1998 Mobil implemented reorganization programs in Australia, New Zealand and Latin America to integrate regional fuels and lubes operations. In Europe Mobil completed the implementation of the downstream alliance with BP. In 1997, Mobil and BP announced that the European downstream alliance would implement a major reorganization of its lubricant base oil refining business. Also in 1997, Mobil commenced two major cost savings initiatives in Asia-Pacific: one in Japan in response to the deregulated business environment and the other in Australia. After-tax costs for programs initiated in 1998 were \$41 million and for the 1997 programs were \$189 million. Benefits associated with these undertakings are estimated at \$140 million per year after tax and should be realized by the end of 2000.

The following table summarizes the activity in the reorganization reserve. The 1997 opening balance represents accruais for provisions taken in prior years

	Opening	- Castelenson	4-4-5-4-5-	Balance at		
	Balance	Additions	Deductions	Year End		
(* * * * * * * * * * * * * * * * * * *		* * *******	**********		****************	
		(millions	of dollars)			
1997	\$368	\$272	\$340	\$300		
1998	300	50	181	169		
1999	169	224	342	51		
					F8	

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF DPERATIONS

CAPITAL AND EXPLORATION EXPENDITURES

Capital and exploration expenditures in 1999 were \$13,3 billion, down from \$15.5

billion in 1998, reflecting timing of major project expenditures and reduced activity levels resulting from the low-price environment in early 1999.

Exploration and production spending was down 16 percent to \$8.4 billion in 1999, from \$10.0 billion in 1998, primarily reflecting the completion of several major projects in the North Sea, a smaller program in the U.S. in 1999 and lower exploration expenses. Capital investments in refining and marketing totaled \$2.4 billion in 1999, down \$0.6 billion from 1998, primarily due to lower spending in the retail businesses. Chemicals capital expenditures were \$2.2 billion in 1999, up from \$2.1 billion in 1999, reflecting higher investments for plant capacity in Asia-Pacific, Saudi Arabia and the Gulf Coast.

Capital and exploration expenditures in the U.S. totaled \$3.4 billion in 1999, a decrease of \$0.8 billion from 1998, reflecting lower spending in both exploration and production and refining and marketing. Spending outside the U.S. of \$9.9 billion in 1999 compared with \$11.3 billion in 1998, reflecting lower expenditures in both exploration and production and refining and marketing, slightly offset by higher spending in chemicals.

Firm commitments related to capital projects totaled approximately \$4.6 billion at the end of 1999, compared with \$7.4 billion at year-end 1998. The largest single commitment in 1999 was \$2.1 billion associated with the development of natural gas resources in Malaysia. The corporation expects to fund the majority of these commitments through internally generated funds

MARKET RISKS, INFLATION AND OTHER UNCERTAINTIES

In the past, crude, product and chemical prices have fluctuated widely in response to changing market forces. The impacts of these price fluctuations on earnings from exploration and production operations, refining and marketing operations and chemical operations have been varied, tending at times to be offsetting.

The markets for crude oil and natural gas have a history of significant price volatility. Although prices will occasionally drop precipitously, industry prices over the long term will continue to be driven by market supply and demand fundamentals. Accordingly, the corporation tests the viability of its oil and gas operations based on long-term price projections. The corporation's assessment is that its operations will continue to be successful in a variety of market conditions. This is the outcome of disciplined investment and asset management programs.

Investment opportunities are tested against a variety of market conditions, including low price scenarios. As a result, investments that would succeed only in highly favorable price environments are screened out of the investment plan. In addition, the corporation has had an aggressive asset management program in which under-performing assets are either improved to acceptable levels or divested. The asset management program involves a disciplined, regular review to ensure that all assets are contributing to the corporation's strategic and financial objectives. The result has been the creation of a very efficient capital base. In 1999, no oil or gas assets required adjustments for impairment.

Risk Management

The corporation's size, geographic diversity and the complementary nature of the upstream, downstream and chemicals businesses mitigate the corporation's risk from changes in interest rates, currency rates and commodity prices. As a result, the corporation makes limited use of derivatives to hedge exposures arising from existing transactions. Pre-merger, Mobil managed these exposures using defined benchmarks for hedging to achieve a desired risk profile for the environment in which Mobil operated and financed its assets. The contract positions related to these pre-merger activities are being phased down as such contracts are settled or mature.

Interest rate, foreign exchange rate and commodity price exposures from the contracts undertaken in accordance with the corporation's policies have not been significant. Derivative instruments are not held for trading purposes nor do they have leveraged features.

Debt-Related Instruments

The corporation is exposed to changes in interest rates, primarily as a result of its short-term and long-term debt with both fixed and floating interest rates. The corporation makes limited use of interest rate swap agreements to adjust the ratio of fixed and floating rates in the debt portfolio. The impact of a 100 basis point change in interest rates affecting the corporation's debt would not be material to earnings, cash flow or fair value. Pre-merger, Mobil's benchmark for interest rate risk was 100 percent floating rate. Mobil's benchmark was also to fully hedge exposures to foreign currency rate risk resulting from debt instruments denominated in a currency other than the functional currency of the borrower or lender.

Foreign Currency Exchange Rate Instruments

The corporation conducts business in many foreign currencies and is subject to foreign currency exchange rate risk on cash flows related to sales, expenses, financing and investment transactions. The impacts of fluctuations in foreign currency exchange rates on ExcomMobil's geographically diverse operations are varied and often offsetting in amount. The corporation makes limited use of currency exchange contracts to reduce the risk of adverse foreign currency movements related to certain foreign currency debt obligations. Under the former Mobil policy, the benchmark used by Mobil was to fully hedge identified net exposures to foreign currency exchange rate risk resulting from transactions in currencles that were not the functional currency of the affected affiliate. Aggregate foreign exchange transaction gains and losses included in net income are discussed in note 6 to the consolidated financial statements.

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Commodity Instruments

The corporation makes limited use of commodity forwards, swaps and futures contracts of short duration to mitigate the risk of unfavorable price movements on certain crude, natural gas and petroleum product purchases and sales. Prior

to the merger, Mobil's benchmark for hydrocarbon sales and purchases was prevailing market price. Mobil used futures, forwards, swaps and options to achieve this benchmark.

Inflation and Other Uncertainties

The general rate of inflation in most major countries of operation has been relatively low in recent years, and the associated impact on operating costs has been countered by cost reductions from efficiency and productivity improvements.

The operations and earnings of the corporation and its affiliates throughout the world have been, and may in the future be, affected from time to time in varying degree by political developments and laws and regulations, such as forced divestiture of assets; restrictions on production, imports and exports; price controls, tax increases and retroactive tax claims; expropriation of property; cancellation of contract rights and environmental regulations. Both the likelihood of such occurrences and their overall effect upon the corporation vary greatly from country to country and are not predictable.

RECENTLY ISSUED STATEMENTS OF FINANCIAL ACCOUNTING STANDARDS

In June 1998, the Financial Accounting Standards Board released Statement No. 133, "Accounting for Derivative Instruments and Hedging Activities Information." As amended by Statement No. 137 issued in June 1999, this statement, which must be adopted beginning no later than January 1, 2001 for calendar year companies such as the corporation, establishes accounting and reporting standards for derivative instruments. The statement requires that an entity recognize all derivatives as either assets or liabilities in the financial statements and measure those instruments at fair value, and it defines the accounting for changes in the fair value of the derivatives depending on the intended use of the derivative. Adoption of this statement is not expected to have a material effect upon the corporation's operations or financial condition.

SITE RESTORATION AND OTHER ENVIRONMENTAL COSTS

Over the years the corporation has accrued provisions for estimated site restoration costs to be incurred at the end of the operating life of certain of its facilities and properties. In addition, the corporation accrues provisions for environmental liabilities in the many countries in which it does business when it is probable that obligations have been incurred and the amounts can be reasonably estimated. This policy applies to assets or businesses currently owned or previously disposed. The corporation has accrued provisions for probable environmental remediation obligations at various sites, including multi-party sites where ExxonNobil has been identified as one of the potentially responsible parties by the U.S. Snvironmental Protection Agency. The involvement of other financially responsible companies at these multi-party sites mitigates ExxonMobil's actual joint and several liability exposure. At present, no individual site is expected to have losses material to ExxonMobil's operations, financial condition or liquidity.

Charges made against income for site restoration and environmental liabilities were \$219 million in 1999, \$240 million in 1998 and \$190 million in 1997. At the end of 1999, accumulated site restoration and environmental provisions, after reduction for amounts paid, amounted to \$3.7 billion. ExxonMobil believes that any cost in excess of the amounts already provided for in the financial statements would not have a materially adverse effect upon the corporation's operations, financial condition or liquidity.

In 1999, the corporation spent \$2,052 million (of which \$650 million were capital expenditures) on environmental conservation projects and expenses worldwide, mostly dealing with air and water conservation. Total expenditures for such activities are expected to be about \$2 billion in both 2000 and 2001 (with capital expenditures representing about 25 percent of the total).

TAXES

Income, excise and all other taxes and duties totaled \$61.5 billion in 1999, an increase of \$1.6 billion or 3 percent from 1998. Income tax expense, both current and deferred, was \$3.2 billion compared to \$3.9 billion in 1998, reflecting lower pre-tax income in 1999, the impact of lower foreign tax rates and favorable resolution of tax-related issues. The effective tax rate was 31.8 percent in 1999 versus 35.2 percent in 1998. Excise and all other taxes and duties increased \$2.3 billion to \$58.3 billion, reflecting higher prices.

Income, excise and all other taxes and duties totaled \$59.9 billion in 1998, a decrease of \$4.8 billion or 7 percent from 1997. Income tax expense, both current and deferred, was \$3.9 billion compared to \$7.6 billion in 1997, reflecting lower pre-tax income in 1998, the impact of lower foreign tax rates and favorable resolution of tax-related issues. The effective tax rate was 35.2 percent in 1998 versus 41.1 percent in 1997. Excise and all other taxes and duties declined \$1.2 billion to \$56.0 billion, reflecting lower prices.

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

LIQUIDITY AND CAPITAL RESOURCES

In 1999, cash provided by operating activities totaled \$15.0 billion, down \$1.4 billion from 1998. Major sources of funds were net income of \$7.9 billion and non-cash provisions of \$8.3 billion for depreciation and depletion.

Cash used in investing activities totaled \$11.0 billion, down \$1.0 billion from 1998 primarily as a result of lower additions to property, plant and equipment, partly offset by lower sales of subsidiaries and property, plant and equipment.

Cash used in financing activities was \$4.8 billion, down \$2.4 billion, primarily due to fewer common share purchases. Dividend payments on common shares increased from \$1.666 per share to \$1.687 per share and totaled \$5.8 billion, a payout of 74 percent. Total consolidated debt increased by \$2.0 billion to \$19.0 billion.

Shareholders' equity increased by \$1.3 billion to \$63.5 billion. The ratio of Shareholders' equity increased by \$1.3 billion to \$63.5 billion. The ratio of debt to capital increased to 22 percent, reflecting higher debt levels. During 1999. Exxon purchased 8.3 million shares of its common stock for the treasury at a cost of \$648 million. These purchases were used to offset shares issued in conjunction with the company's benefit plans and programs. Purchases were made both in the open market and through negotiated transactions. Consistent with pooling of interest accounting requirements, these repurchases were suspended effective with the close of the ExxonMobil merger on November 10, 1999. Previously, as a consequence of the then proposed merger of Exxon and Mobil announced on December 1, 1998, both companies' repurchase programs to reduce the number of shares outstanding were discontinued.

In 1998, cash provided by operating activities totaled \$16.4 billion, down \$5.0 billion from 1997. Major sources of funds were net income of \$8.1 billion and non-cash provisions of \$8.4 billion for depreciation and depletion.

Cash used in investing activities in 1998 totaled \$12.0 billion, up \$1.1 billion from 1997 primarily as a result of higher additions to property, plant and equipment and lower sales of subsidiaries and property, plant and equipment.

Cash used in financing activities was \$7.1 billion in 1998. Dividend payments on common shares increased from \$1.519 per share to \$1.566 per share and totaled \$5.8 billion, a payout of 72 percent. Total consolidated debt was essentially unchanged from 1997, reflecting the de-consolidated on majority owned companies in Rong Kong and China discussed in note 9 to the consolidated financial statements, offset by increased borrowing

Shareholders' equity decreased by \$1.0 billion to \$62.1 billion. The ratio of debt to capital increased from 20.3 percent to 20.6 percent. During 1998, Exxon and Mobil purchased a combined 53.1 million shares of their common stock at a and Mobil purchased a combined 53.1 million shares of their common stock at a cost of \$3.5 billion. These purchases reflect both Exxon's increased share repurchases announced in the first quarter of 1997 and Mobil's increased share repurchases announced in the third quarter of 1998, as well as purchases to offset shares issued in conjunction with the company's benefit plans and programs. Furchases were made in both the open market and through negotiated transactions. As a consequence of the then proposed merger of Exxon and Mobil announced on December 1, 1998, both companies' repurchase programs to reduce the number of shares outstanding were discontinued.

Although the corporation issues long-term debt from time to time and maintains a revolving commercial paper program, internally generated funds cover the majority of its financial requirements.

As discussed in note 15 to the consolidated financial statements, the corporation's financial derivative activities are limited to simple risk management strategies. The corporation does not trade in financial derivatives nor does it use financial derivatives with leveraged features. The corporation maintains a system of controls that includes a policy covering the authorisation, reporting, and monitoring of derivative activity. The corporation's derivative activities pose no material credit or market risks to ExxonMobil's operations, financial condition or liquidity.

Litigation and Other Contingencies

As discussed in note 19 to the consolidated financial statements, a number of lawsuits, including class actions, were brought in various courts against the corporation and certain of its subsidiaries relating to the accidental release of crude oil from the tanker Exxon Valder in 1989. Essentially all of these lawsuits have now been resolved or are subject to appeal.

On September 24, 1996, the United States District Court for the District of alaska entered a judgment in the amount of \$5.058 billion in the Exxon Valder civil trial that began in May 1994. The District Court warded approximately \$18.6 million in compensatory damages to fisher plaintiffs, \$38 million in prejudgment interest on the compensatory damages and \$5 billion in punitive damages to a class composed of all persons and entities who asserted claims for prejuggment interest on the compensatory damages and 55 billion in publice damages to a class composed of all persons and entities who asserted claims for punitive damages from the corporation as a result of the Exxon Valder grounding. The District Court also ordered that these awards shall bear interest from and after entry of the judgment. The District Court stayed execution on the judgment pending appeal based on a \$6.75 billion letter of credit posted by the corporation. The corporation has appealed the judgment. The corporation has also appealed the District Court's denial of its renewed motion for a new trial. The united States Court of Appeals for the Ninth Circuit heard oral arguments on the appeals on May 3, 1999. ExxonMobil continues to believe that the punitive damages in this case are unwarranted and that the judgment should be set aside or substantially reduced by the appellate courts. The ultimate cost to ExxonMobil from the lawsuits arising from the Exxon Valdez grounding is not possible to predict and may not be resolved for a number of years.

The U.S. Tax Court has decided the issue with respect to the pricing of crude oil purchased from Saudi Arabia for the years 1979-1981 in favor of the corporation. This decision is subject to

appeal. Certain other issues for the years 1979-1988 remain pending before the Tax Court. Ultimate resolution of these issues and several other tax and legal issues, notably final resolution of the gas lifting imbalance in the Common Area (along the German/Dutch border), is not expected to have a materially adverse effect upon the corporation's operations, financial condition or liquidity.

There are no events or uncertainties known to management beyond those already included in reported financial information that would indicate a material change in future operating results or financial condition.

On January 1, 1999, eleven European countries established fixed conversion rates between their existing sovereign currencies (*legacy currencies*) and adopted the euro as their common legal currency. The euro and the legacy currencies are each legal tender for transactions now. Beginning January 1, 2002, the participating countries will issue euro-denominated bills and coins. By July 1, 2002 each country will withdraw its sovereign currency and transactions thereafter will be conducted solely in euros. Based on work to date, the conversion to the euro is not expected to have a material effect on the

corporation's operations, financial condition or liquidity.

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The Year 2000 issue resulted from computer programs being written using two digits rather than four to define a specific year, leading to the potential for problems during transition to the year 2000. ExxonMobil's preparation work for the Year 2000 rollover spanned several years. The scope of this work encompassed business information systems, infrastructure and technical and field systems, including systems utilizing embedded technology, such as micro-controllers. ExxonMobil completed preparation work in 1999, and the rollover occurred with no significant events or operational impacts. The total cost to the corporation of achieving Year 2000 compliant systems was approximately \$410 million pre-tax, primarily over the 1997-1999 timeframe. Total expenditures in 1999 were approximately \$120 million pre-tax.

FORWARD-LOOKING STATEMENTS

Statements in this discussion regarding expectations, plans and future events or conditions are forward-looking statements. Actual future results, including synergy benefits from the merger, asset divestment proceeds; financing sources; the resolution of contingencies; the effect of changes in prices, interest rates and other market conditions; and environmental and capital expenditures could differ materially depending on a number of factors. These factors include management's ability to implement merger plans successfully and on schedule; the outcome of commercial negotiations; and other factors discussed above and in Item 1 of ExxonMobil's most recent annual report on Form 10-K.

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REPORT OF INDEPENDENT ACCOUNTANTS

(LOGO) PricewaterhouseCoopers LLP

Dallas, Texas February 23, 2000

To the Shareholders of Exxon Mobil Corporation

In our opinion, based on our audits and the report of other auditors, the consolidated financial statements appearing on pages F14 through F12 present fairly, in all material respects, the financial position of Exxon Mobil Corporation and its subsidiary companies at December 31, 1999 and 1998, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1999, in conformity with accounting principles generally accepted in the United States. These financial statements are the responsibility of the corporation's management, our responsibility is to express an opinion on these financial statements based on our audits. The consolidated financial statements give retroactive effect to the merger of Mobil Corporation on November 10, 1999 in a transaction accounted for as a pooling of interests, as described in note 3 to the consolidated financial statements. We did not audit the financial statements of Mobil Corporation, which statements reflect total assets of \$42,754 million at December 31, 1998, and total revenues of \$53,531 million and \$65,906 million for the years ended December 31, 1998 and 1997, respectively. Those statements were audited by other auditors whose report thereon has been furnished to us, and our opinion expressed herein, insofar as it relates to the amounts included for Mobil Corporation, is based solely on the report of the other auditors. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States, which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits and the report of the other auditors

As discussed in note 2 to the consolidated financial statements, the corporation changed its method of accounting for the cost of start-up activities in 1998.

/s/ PRICEWATERHOUSECOOPERS LLP

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CONSOLIDATED STATEMENT OF INCOME

<TABLE>

<captions< th=""><th></th><th>2000</th><th>1997</th></captions<>		2000	1997
	1999	1996	1337
	(mi.)	llions of dollar	e)
<s></s>	«C>	<c></c>	<c></c>
Revenue			
Sales and other operating revenue, including excise taxes	\$ 182,529	\$ 165,627	\$ 197,735
Earnings from equity interests and other revenue	2,998	4.015	4,011
desired and allery and delice actions	**********		
Total revenue	\$ 185,527	\$ 169,542	\$ 201,746
	*********	***********	**********
Costs and other deductions			
Crude oil and product purchases	\$ 77.011	\$ 62,145	\$ 83,441
Operating expenses	16.806	17,666	19,475
Selling, general and administrative expenses	13,134	12,925	13,574
Depreciation and depletion	B, 304	8,355	8,228
Exploration expenses, including dry holes	1,246	1,506	1,252
Merger related expenses	625		
Interest expense	695	568	863
Excise taxes	21,646	20,926	21,183
Other taxes and duties	34,765	33,203	33,867
Income applicable to minority and preferred interests	145	265	526
theome appreciate to minority and presented interests			
Total costs and other deductions	5 174,377	\$ 157,559	\$ 182,409
Income before income taxes	\$ 11,150	\$ 12,083	5 19,337

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Income taxes	3,240	3,939	7.605		
Income before cumulative effect of accounting change Cumulative effect of accounting change	\$ 7,910	5 8.144 (70)	\$ 11,732		
Net income	\$ 7,910	\$ 8.074	\$ 11,732		
Net income per common share (dollars) Before cumulative effect of accounting change Cumulative effect of accounting change	5 2.28	\$ 2_33 (0.02)	\$ 3.32		
Net income	\$ 2.28	2.31	\$ 3.32		
Net income per common share - assuming dilution (dollars) Before cumulative effect of accounting change Cumulative effect of accounting change	\$ 2.25	\$ 2.30 (0.02)	\$ 3.28		
Net income	\$ 2.25	2.28	\$ 3.28		

					The information on pages F18 through F32 is an integral part of statements.	of these				
	F14									
CONSOLIDATED BALANCE SHEET										
			Dec. 31	Dec. 31						
(14 pp 1 cc c pp f c cc busingsmissingsmissing)			1999	1998						
<\$>	, 100 mm	y-y-1-1,00 406 83 F0		of dollars)						
Assets										
Current assets Cash and cash equivalents Other marketable securities Notes and accounts receivable, less estimated doubtful am	ardint c		5 1,688 73 19,155	\$ 2,386 50 15,629						
Inventories Crude oil, products and merchandise	iount's		7,370	7,537						
Materials and supplies Prepaid taxes and expenses			1,122 1,733	1,155 1,637						
Total current assets			5 31,141	\$ 28,594						
Investments and advances Property, plant and equipment, at cost, less accumulated de Other assets, including intangibles, net	preciation and deple	tion	14,544 94,043 4,793	13,915 92,583 4,243						
Total assets			\$ 144.521	\$ 139,335						
tiabilities										
Current liabilities Notes and loans payable			\$ 10,570	5 8,484						
Accounts payable and accrued liabilities Income taxes payable			25,492 2,671	23,154 2,143						
Total current liabilities			\$ 38,733	5 33,781						
Long-term debt Annuity reserves and accrued liabilities			8,402 12,902	8,532 13,002						
Deferred income tax liabilities Deferred credits			16,251	16,749 1,524						
Equity of minority and preferred shareholders in affiliated	companies		3,688	3,627						
Total liabilities			\$ 81,055	\$ 77,215						

Shareholders' equity Class A preferred stock without par value (16.5 million sha	rec authorized)		s -	\$ 105						
Class B preferred stock without par value (0.2 million shar	es authorized)			641						
Benefit plan related balances Common stock without par value (4,500 million shares author	ized)		3,403	(793) 4,870						
Earnings reinvested Accumulated other nonowner changes in equity			75,055	75.109						
Cumulative foreign exchange translation adjustment			(2,300)	(1,573)						
Minimum pension liability adjustment Unrealized gains on stock investments			(299) 31	(408)						
Common stock held in treasury (533 million shares in 1999 a	nd 711 million share	s in 1998)	(12,126)	(15,831)						
Total shareholders' equity			5 63,466	\$ 62,120						
Total liabilities and shareholders' equity			\$ 144,521	\$ 139,335						
The information on pages F18 through F32 is an integral part of statements.	f these									
F15										
CONSOLIDATED STATEMENT OF SHAREHOLDERS' BOULTY										
CONSORDATED STATEMENT OF SHAREHOLDERS' EQUITY	99	1998		1997	-					
Nonowner

	Shareholders' Equity	Changes in Equity	Shareholders' Equity	Changes in Equity	Shareholders' Equity	Changes in Equity
<9>	<c></c>	«C»	(millions	of dollars)	<c></c>	<c></c>
Class A preferred stock outstanding at end of year class B preferred stock outstanding	\$ -	302	\$ 105	302	\$ 190	750
at end of year Benefit plan related balances	(298)		641 (793)		665 (554)	
Common stock (see note 13) At beginning of year	4.870		4,766		5.181	
Issued Other	92 303		104		84	
Cancellation of common stock held in treasury	(1,862)				(499)	
At end of year	\$ 3,403		\$ 4,870		\$ 4,766	
Sarnings reinvested At beginning of year Net income for year Dividends - common and preferred shares Cancellation of common stock held	75,109 7,910 (5,872)	\$ 7,910	72,875 8,074 (5,840)	\$ 8,074	76,264 11,732 (5,751)	\$ 11,732
in treasury	(2,092)				(9,370)	
	\$ 75,055		\$ 75,109		\$ 72,875	
Accumulated other nonowner changes in equity At beginning of year Poreign exchange translation adjustment Minimum pension liability adjustment	(1,981) (727)	(727)	(1.940) 367	367	1,053 (2,993)	(2,993)
Unrealized gains on stock investments	109 31	109 31	(408)	(408)		
At end of year	\$ (2,568)		\$ (1,981)		\$ (1,940)	3
Total	*******	\$ 7,323	****	\$ 8,033	*******	\$ 8,739
Common stock held in treasury At beginning of year Acquisitions, at cost	(15,831) (976)		(12,881) (3,523)	, to Mark !	(20,163) (3,101)	vegasting.
Dispositions Cancellation, returned to unissued	727 3,954		573		514 9,869	
At end of year	\$(12,126)		\$(15,831)		\$(12,881)	
Shareholders' equity at end of year	\$ 63,466		\$ 62,120		\$ 63,121	
			Share Activity			
	1999		1998		1997	
Class A preferred stock			(millions of shar		í	
Class B preferred stock Common stock Issued (see note 13)	ve.		0,2		0.2	
At beginning of year Issued	4,169		4.164		4,802	
Cancelled	(163)				(642)	
At end of year	4,010		4,169		4,164	
Held in treasury (see note 11) At beginning of year	(711)		(674)		(1,279)	
Acquisitions Dispositions	(17)		(53) 16		(53) 16	
Cancellation, returned to unissued	163				642	
At end of year	(533)		(711)		(674)	
Common shares outstanding at end of year	3,477		3,458		3.490	
<pre></pre>						

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statements. tegral part of | these | ******* | | ******* | || | | | F16 | | | |
CONSOLIDATED STATEMENT OF CASH FLOWS						
A NAS AVIONEITO NO ARTINOVANOLI Y				1999	1998	1997
a des consider a servicion in termination		0.0000000000000000000000000000000000000	*********		nillions of days	
				(11	millions of doll	
cash flows from operating activities					∢C>	«C>
				\$ 7,910 145	\$ 8,074 265	\$ 11,732 526

Changes in operational Reduction/(increase)	working capital, excluding cash and debt - Notes and accounts receivable
1	- Inventories - Prepaid taxes and expenses
Increase/(reduction) All other items - net	- Accounts and other payables

Net cash provided by operating activities

Cash flows from investing activities
Additions to property, plant and equipment
Sales of subsidiaries and property, plant and equipment
Additional investments and advances
Sales of investments and collection of advances
Additions to other marketable securities
Sales of other marketable securities

Net cash used in investing activities

Net cash generation before financing activities

Cash flows from financing activities
Additions to long-term debt
Reductions in long-term debt
Additions to short-term debt
Reductions in short-term debt
Reductions in short-term debt
Additions/(reductions) in debt with less than 90 day maturity
Cash dividends to ExxonMobil shareholders
Cash dividends to minority interests
Changes in minority interests and sales/(purchases) of affiliate stock
Common stock acquired

Net cash used in financing activities

Effects of exchange rate changes on cash

Increase/(decrease) in cash and cash equivalents Cash and cash equivalents at beginning of year

Cash and cash equivalents at end of year

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The information on pages F18 through F32 is an integral part of these

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The corporation's principal business is energy, involving the worldwide exploration, production, transportation and sale of crude oil and natural gas and the manufacture, transportation and sale of petroleum products. The corporation is also a major worldwide manufacturer and marketer of petrochemicals and participates in coal and minerals mining and electric power generation.

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. Actual results could differ from these estimates

The accompanying consolidated financial statements and the supporting and supplemental material are the responsibility of the management of Exxon Mobil Corporation.

1. Summary of Accounting Policies

Principles of Consolidation. The consolidated financial statements include the accounts of those significant subsidiaries owned directly or indirectly with more than 50 percent of the voting rights held by the corporation, and for which other shareholders do not possess the right to participate in significant management decisions. Amounts representing the corporation's percentage interest in the underlying net assets of other significant subsidiaries and less than majority owned companies in which a significant equity ownership interest is held, are included in "Investments and advances", the corporation's share of the net income of these companies is included in the consolidated statement of income caption "Earnings from equity interests and other revenue."

Investments in other companies, none of which is significant, are generally included in "Investments and advances" at cost or less. Dividends from these companies are included in income as received.

Revenue Recognition. Revenues associated with sales of crude oil, natural gas, petroleum and chemical products and all other items are recorded when title passes to the customer.

Revenues from the production of natural gas properties in which the corporation has an interest with the other producers are recognized on the basis of the company's net working interest. Differences between actual production and net working interest volumes are not significant.

Derivative Instruments. As discussed in footnote 15, the corporation makes limited use of derivative instruments to hedge its exposures associated with interest rates, foreign currency exchange rates and hydrocarbon prices. Gains and losses on hedging contracts are recognized concurrent with the recognition of the economic impact of the underlying exposures using either the accrual or deferral method of accounting. In order to qualify for hedge accounting, the derivative instrument must be designated and effective as a hedge.

(3,478)	2,170	2,078
50	438	292
177	.8	(30)
3,045	(3,010)	(2,884)
(260)	(259)	173
******		********
\$ 15,013	\$ 15,436	\$ 21,442

\$(10,849)	\$(12,730)	\$(11,652)
854	1,522	2,193
(1,476)	(1,469)	(1,741)
505	698	363
(61)	(61)	(37)
42	58	39

	\$(11,982)	\$(10,835)
5 4.028	5 4,454	\$ 10,607

\$ 454	S 1.384	\$ 1,089
(341)	(305)	(806)
1.870	930	1,118
(2, 359)	(2,175)	(2,591)
2,210	2,384	282
(5,872)	(5.843)	(5,757)
(219)	(387)	(420)
(200)	(84)	204
(670)	(3,547)	(3,122)
348	507	424

	5 (7,136)	\$ (9,579)
*******		*******
\$ 53	S 23	\$ (127)
\$ (698)	\$ (2,659)	\$ 901
	\$ (2,659) 5,045	s 901 4,144
\$ (698) 2,386	\$ (2,659)	\$ 901 4,144

The accrual method is used for interest rate swaps, cross-currency interest rate swaps and commodity swaps. Under the accrual method, differentials in the swapped amounts are recorded as adjustments of the underlying periodic cash flows that are being hedged. If these swaps are terminated, the gains and losses are amortized over the original lives of such contracts. The deferral method is used for futures exchange contracts, forward contracts and commodity swaps.

Gains and losses resulting from changes in value of derivative instruments are deferred and recognized in the same period as the gains and losses of the items being hedged.

Cash flow from derivative instruments that qualify for hedge accounting is included in the same category for cash flow purposes as the item being hedged.

Inventories. Crude oil, products and merchandise inventories are carried at the lower of current market value or cost (generally determined under the last-in, first-out method-LIFO). Costs include applicable purchase costs and operating expenses but not general and administrative expenses or research and development costs. Inventories of materials and supplies are valued at cost or less.

Property, Plant and Equipment. Depreciation, depletion and amortization, based on cost less estimated salvage value of the asset, are primarily determined under either the unit-of-production method or the straight-line method. Unit-of-production rates are based on oil, gas and other mineral reserves estimated to be recoverable from existing facilities. The straight-line method of depreciation is based on estimated asset service life taking obsolescence into consideration.

Maintenance and repairs are expensed as incurred. Major renewals and improvements are capitalized and the assets replaced are retired.

The corporation's exploration and production activities are accounted for under the "successful efforts" method. Under this method, costs of productive wells and development dry holes, both tangible and intangible, as well as productive acreage are capitalized and amortized on the unit-of-production method. Costs of that portion of undeveloped acreage likely to be unproductive, based largely on historical experience, are amortized over the period of exploration. Other exploratory expenditures, including geophysical costs, other dry hole costs and annual lease rentals, are expensed as incurred. Exploratory wells that find oil and gas in an area requiring a major capital expenditure before production could begin are evaluated annually to assure that commercial quantities of reserves have been found or that additional exploration work is underway or planned. Exploratory well costs not meeting either of these tests are charged to expense.

Oil, gas and other properties held and used by the corporation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable. The corporation estimates the future undiscounted cash flows of the affected properties to judge the recoverability of carrying amounts. In general, analyses are based on proved reserves, except in circumstances where it is probable that additional resources will be developed and contribute to cash flows in the future.

Environmental Conservation and Site Restoration Costs. Liabilities for environmental conservation are recorded when it is probable that obligations have been incurred and the amounts can be reasonably estimated. These liabilities are not reduced by possible recoveries from third parties, and projected cash expenditures are not discounted.

Site restoration costs that may be incurred by the corporation at the end of the operating life of certain of its facilities and properties are reserved ratably over the asset's productive life.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Foreign Currency Translation. The "functional currency" for translating the accounts of the majority of refining, marketing and chemical operations outside the U.S. is the local currency. Local currency is also used for exploration and production operations that are relatively self-contained and integrated within a particular country, such as in Canada, the United Kingdom, Norway and Continental Surope. The U.S. dollar is used for operations in highly inflationary economies, in Singapore which is predominantly export oriented and for some exploration and production operations, primarily in Malaysia, Indonesia, Nigeria, Equatorial Guinea and the Middle East. For all operations, gains or losses on remeasuring foreign currency transactions into functional currency are included in income.

2. Accounting Change

Effective as of January 1, 1998, the corporation adopted the American Institute of Certified Public Accountants' Statement of Position 98-5, "Reporting on the Costs of Start-up Activities." This statement requires that costs of start-up activities and organizational costs be expensed as incurred. The cumulative effect of this accounting change on years prior to 1998 was a charge of \$70 million (net of \$70 million income tax effect), or \$0.02 per common share.

3. Merger of Exxon Corporation and Mobil Corporation

On November 30, 1999, a wholly-owned subsidiary of Eccon Corporation (Eccon) merged with Mobil Corporation (Mobil) so that Mobil became a wholly-owned subsidiary of Eccon (the "Merger"). At the same time, Eccon changed its name to Eccon Mobil Corporation (EcconMobil). Under the terms of the agreement, approximately 1.0 billion shares of EcconMobil common stock were issued in exchange for all the outstanding shares of Mobil common stock based upon an exchange ratio of 1.32015. Following the exchange, former shareholders of Eccon owned approximately 70 percent of the corporation, while former Mobil shareholders owned approximately 30 percent of the corporation. Each outstanding share of Mobil preferred stock was converted into one share of a new class of EcconMobil preferred stock.

As a result of the Merger, the accounts of certain refining, marketing and chemicals operations jointly controlled by the combining companies have been

included in the consolidated financial statements. These operations were previously accounted for by Exxon and Mobil as separate companies using the equity method of accounting.

The Merger was accounted for as a pooling of interests, Accordingly, the consolidated financial statements give retroactive effect to the Merger, with all periods presented as if Exxon and Mobil had always been combined. Certain reclassifications have been made to conform the presentation of Exxon and Mobil.

The following table sets forth summary data for the separate companies and the combined amounts for periods prior to the Merger.

Nine Months Ended	End		
september 30	Deceme	er 31	
1999	1998	1997	
li	millions of dollar	si	
	DECADES DIVER	7	
\$ 89,378	\$ 117,772	\$ 137,242	
42,782	53.531	65,906	
6,033	7,987	9,925	
(7,248)	(9,648)	(11, 327)	
\$ 130,945	\$ 169,642	\$ 201,746	
************		**********	
\$ 3,725	\$ 6,370	\$ B,460	
1,901	1,704	3.272	
\$ 5,626	\$ 8,074	\$ 11,732	
	\$ 89,378 42,782 6,033 (7,248) \$ 130,945 \$ 3,725 1,901	September 30 Decemb 1999 1998 (millions of dollar \$ 89,378 \$ 117,772 42,782 \$ 53,531 6,033 7,987 (7,248) (9,648) \$ 130,945 \$ 169,642 \$ 3,725 \$ 6,370 1,901 1,704	September 30 December 31 1999 1998 1997 {millions of dollars} \$ 89,378 \$ 117,772 \$ 137,242 42.782 53.531 65,906 6,033 7,987 9,925 (7,248) (9,648) (11,327) \$ 130,945 \$ 169,642 \$ 201,746 \$ 3,725 \$ 6,370 \$ 8,460 1,901 1,704 3.272

 Consolidation of activities previously accounted for using the equity method of accounting.

In association with the Merger, \$625 million pre-tax (\$469 million after-tax) of costs were recorded as merger related expenses. Charges included separation expenses of approximately \$350 million related to workforce reductions (approximately 1,750 employees at year-end 1999), plus implementation and merger closing costs. The reserve balance, primarily related to severance, at year end 1999 of approximately \$330 million, is expected to be expended in 2000.

Certain property -- primarily refining, marketing, pipeline and natural gas distribution assets -- must be divested as a condition of the regulatory approval of the Merger by the U.S. Federal Trade Commission and the European Commission. These assets, with a carrying value of approximately \$3 billion, are expected to be sold in the year 2000. The properties have historically earned approximately \$200 million per year.

4. Adjustments of Asset Carrying Amounts

In 1998, as a result of lower worldwide crude oil and petroleum product prices, Mobil recorded a charge of \$325 million before tax (\$270 million after tax) in crude oil and product purchases to adjust certain inventories to their market value.

Also in 1998, a charge of \$491 million before tax (\$387 million after tax) was recorded by Mobil to write down certain oil and gas properties to fair value, mainly in the U.S.. Latin America and Asia-Pacific. These write-downs were the result of the reduction of hydrocarbon reserves and governmental actions. Of this amount, \$352 million was recorded in depreciation and depletion with the remainder recorded primarily in operating expenses and exploration expenses.

5. Reorganization Costs

In the first guarter of 1999, the corporation recorded a \$120 million after-tax charge for the non-merger related reorganization of Japanese refining and marketing operations in its wholly-owned Esso Sekiyu K.K. and 50.1 percent owned General Sekiyu K.K. affiliates. The reorganization resulted in the reduction of approximately 700 administrative, financial, logistics and marketing service employee positions. The Japanese affiliates recorded a combined charge of \$216 million (before tax) to selling, general and administrative expenses for the employee related costs. Substantially all cash expenditures anticipated in the restructuring provi-

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sion have been paid as of the end of 1999. General Sekiyu also recorded a \$211 million (before tax) charge to depreciation and depletion for the write-off of costs associated with the cancellation of a power plant project at the Kawasaki terminal.

In 1998, Mobil implemented new reorganization programs in Australia and New Zealand and in Latin America to integrate regional fuels and lubes operations. These programs resulted in the elimination of approximately 500 positions as well as asset write-downs in Australia and New Zealand. A provision of \$50 million (\$41 million after tax) was recorded in selling, general and administrative expenses and depreciation and depletion for these programs. In 1998 and 1999, a combination of cash for employee separation benefits and exit costs and noncash costs for the closure of facilities essentially depleted the

Also during 1998, Mobil and BP completed the implementation of their alliance, which combined the companies' European operations in the refining and marketing of fuels and lubricants. This alliance resulted in the elimination of approximately 1,000 positions, the impairment of certain fuels marketing assets and the closure of surplus facilities. During 1996, a provision of \$184 million (\$145 million after tax), was established primarily for separation costs related to workforce reductions, facilities closure costs and asset write-downs. There was no amount remaining in the reserve at December 31, 1999, for this program.

In 1997, Mobil and BP announced that the alliance would implement a major restructuring of its lubricant base oil refining business. This program resulted in the elimination of approximately 460 positions and in write-downs and closure of certain facilities and was completed by the end of 1999. Reserves were recorded in 1997 of about \$86 million (\$82 million after tax) mainly for employee severance costs associated with workforce reductions and for write-downs and closure of certain facilities. These costs were recorded in earnings from equity interests and selling, general and administrative expenses. Cash outlays have been approximately \$40 million and mon-cash costs about \$20 million. The amounts remaining in the reserve at December 31, 1999, 1998 and 1997 were \$28 million, \$35 million and \$66 million, respectively.

Also in 1997. Mobil commenced two major cost savings initiatives in Asia-Pacific--one in Japan in response to the deregulated business environment and the other in Australia. These programs resulted in the elimination of approximately 400 positions and the impairment of certain assets. In 1997, reserves were recorded in the amount of \$172 million (\$107 million after tax) primarily for separation costs related to workforce reductions and for closure of certain facilities. The provisions were recorded in selling, general and administrative expenses; operating expenses; earnings from equity interests and other revenue and depreciation and depletion. At the end of 1999 the reserve was essentially depleted.

The following table summarizes the activity in the reorganization reserve. The 1997 opening balance represents accruals for provisions taken in prior years.

	Opening Balance	Additions	Deductions	Balance at Year End	
	0000000		of dollars)		
1997	\$368	9272	\$340	\$300	
1998	300	50	181	169	
1999	169	224	342	51	

6. Miscellaneous Financial Information

Research and development costs totaled \$630 million in 1999, \$753 million in 1998 and \$763 million in 1997.

Net income included aggregate foreign exchange transaction losses of \$5 million in 1999, and gains of \$20 million in 1998 and \$113 million in 1997.

In 1999, 1998 and 1997, net income included losses of \$7 million, \$8 million and gains of \$69 million, respectively, attributable to the combined effects of LIFO inventory accumulations and draw-downs. The aggregate replacement cost of inventories was estimated to exceed their LIFO carrying values by \$5,898 million and \$957 million at December 31, 1999 and 1998, respectively.

7. Cash Flow Information

The consolidated statement of cash flows provides information about changes in cash and cash equivalents. Righly liquid investments with maturities of three months or less when acquired are classified as cash equivalents.

Cash payments for interest were: 1999 - \$882 million, 1998 - \$1,066 million and 1997 - \$1,149 million. Cash payments for income taxes were: 1999 - \$3,805 million, 1998 - \$4,629 million and 1997 - \$6,762 million.

TOTAL STATE AND ADDRESS OF THE SECOND STATE OF		165 CT 17 St	
B. Additional Working Capital Data	Dec. 31		
	1999	1998	
			.,,,,,,,,,,
Notes and accounts receivable Trade, less reserves of \$231 million	(millions	of dollars)	
and \$234 million	\$14,605	\$10,862	
Other, less reserves of \$10 million	22.00		
and \$13 million	4,550	4,967	
	\$19,155	\$15,829	
	***	exceptioning on the	
Notes and loans payable			
Bank loans	\$ 2,223	\$ 2,051	
Commercial paper	7,231	4,595	
Long-term debt due within one year	407	1,524	
Other	709	314	

	\$10,570	\$ 8,484	
	*******	**********	
Accounts payable and accrued liabilities		477-77	
Trade payables	\$13,524	\$10,915	
Obligations to equity companies	608	498	
Accrued taxes other than income taxes	6,005	5,539	
Other	5,355	6,202	

	\$25,492	\$23,154	
	-		

On December 31, 1999, unused credit lines for short-term financing totaled approximately \$7.1 billion. Of this total, \$4.7 billion support commercial paper programs under terms negotiated when drawn. The weighted average interest rate on short-term borrowings outstanding at December 31, 1999 and 1998 was 5.6 percent and 5.1 percent, respectively.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

9. Equity Company Information

The summarized financial information below includes amounts related to certain less than majority owned companies and majority owned subsidiaries where

minority shareholders possess the right to participate in significant management decisions (see note 1). These companies are primarily engaged in crude production, natural gas marketing and refining operations in North America; natural gas production and distribution, refining and marketing operations in Europe and crude production in Kazakhstan and the Middle Rast, Also included are several power generation, petrochemical/lubes manufacturing and chemical ventures.

Exxon and Mobil each owned 25 percent of certain refining, marketing and chemical operations in Japan and accounted for their interests using the equity method. As a result of the merger, ExxonMobil now owns 50 percent of those operations. These financial statements reflect the consolidation of these operations because the interests not owned by ExxonMobil have less than 50 percent of the voting rights.

During the fourth quarter of 1998, ExxonMobil de-consolidated the majority owned power companies in Hong Kong and China in response to new accounting requirements. These financial statements reflect the de-consolidation of these companies retroactive to January 1, 1998, ExxonMobil's 1998 net income was not affected by the de-consolidation. As of January 1, 1998, these affiliates had assets of \$4.3 billion and total liabilities of \$3.6 billion, including \$2.5 billion of short-term and long-term debt.

<TABLE>

11. Investment in Property, Plant and Equipment

Total petroleum and natural gas

Petroleum and natural gas Exploration and production Refining and marketing

Chemicals

	1	999	1	998		997	
Equity Company Financial Summary	Total	ExxonMobil Share	Total	ExxonMobil Share	Total	ExxonMobil Share	
(*******	*******	********	********	*****		
S> Total revenues Fercent of revenues from companies included in the ExxonMobil	<c></c>	<c></c>		of dollars) <c></c>	∢C>	<c></c>	
consolidation was 8% in 1997, 7% in 1998, and 8% in 1999	\$ 94,534	\$ 32,124	\$ 76,552	5 24.740	\$ 81,861	\$ 26,403	
ncome before income taxes ess: Related income taxes	\$ 4,100 (734)		\$ 4,104 (1,071		\$ 4,826 (1,352		
Net income	\$ 3,366	\$ 1,646	\$ 3,033			\$ 1,599	
orrent assets roperty, plant and equipment, less accumulated depreciation ther long-term assets	\$ 21,518 44,213 4,806	\$ 7,739 15,509 2,106	5 19,037 40,268 3,529	15,221	32,799	11,477	
Total assets	\$ 70,537		5 62,834		\$ 53,112	\$ 19,205	
hort-term debt ther current liabilities ong-term debt ther long-term liabilities dvances from shareholders	\$ 2,856 18,129 13,486 5,372 3,636		\$ 2,628 16,367 11,316	\$ 1,048 5,574 3,488 2,362	\$ 1,804 15,237 8,033 4,546 2,139	5,488 2,063 1,848 1,151	
Net assets				\$ 8,826			
/TABLE>	-						
TABLE>							
. Investments and Advances		Dec 19		ec. 31 1998			
* * * * * * * * * * * * * * * * * * *	*******		llions of				1460
> mpanies carried at equity in underlying assets		<c></c>		<c></c>			
Investments Advances		1	,919	\$ 8,826 2,017			
mpanies carried at cost or less and stock investments carried a	t fair valu	ue	964	769			
ng-term receivables and miscellaneous investments at cost or le	SS	2	, 255	511,612 2,303			
Total		\$14		\$13,915			
TABLE>							
1							
AGE>							

Dec. 31, 1999

Net

28,974 \$ 77,074 9,969

«C»

Cost

\$106,067

54.772 \$160,839

<C>

Dec. 31, 1998

Net

\$ 46,900 29,412 \$ 76,312

Cost

\$100,969

54,341 \$155,310

<C>

(millions of dollars)

Other

10,809 7,000 10,236 6,770 \$189,212 \$ 94,043 \$182,467 \$ 92,583

</TABLE>

Accumulated depreciation and depletion totaled \$95,169 million at the end of 1999 and \$89,884 million at the end of 1998. Interest capitalized in 1999, 1998 and 1997 was \$595 million, \$545 million and \$595 million, respectively.

12. Leased Facilities

Total

At December 31, 1999, the corporation and its consolidated subsidiaries held non-cancelable operating charters and leases covering drilling equipment, tankers, service stations and other properties with minimum lease commitments as indicated in the table.

Net rental expenditures for 1999, 1998 and 1997 totaled \$2,172 million, \$2,760 million and \$2,841 million, respectively, after being reduced by related rental income of \$117 million, \$331 million and \$319 million, respectively. Minimum rental expenditures totaled \$2,311 million in 1999, \$2,910 million in 1998 and \$2,994 million in 1997.

	Minimum commitment	Related rental income	

	millions	of dollars)	
2000	\$ 1,070	5 81	
2001	875	69	
2002	696	35	
2003	538	24	
2004	418	17	
2005 and beyond	2,776	105	

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

13. Capital

At the effective time of the merger of Exxon and Mobil, the authorized common stock of ExxonMobil was increased from three billion shares to 4.5 billion shares. Under the terms of the merger agreement, approximately 1.0 billion shares of ExxonMobil common stock were issued in exchange for all of the outstanding shares of Mobil's common stock based upon an exchange ratio of 1.32015 ExxonMobil shares for each Mobil share.

In 1997, 642 million shares of Exxon common stock held by Exxon as treasury shares were cancelled and returned to the status of authorized but unissued shares. Mobil's common stock accounted for as treasury stock was cancelled at the effective time of the merger.

In 1989, Mobil sold 206 thousand shares of a new issue of Series B Convertible Preferred Stock to its employee stock ownership plan (Mobil ESOP) trust for \$3,887.50 per share. Bach preferred share was convertible into 100 shares of Mobil common stock. The proceeds of the issuance were used by Mobil for general corporate purposes. In connection with the merger, each outstanding share of Mobil's Series B Convertible Preferred Stock was converted into one share of ExxonMobil Class B Preferred Stock with similar terms. Each share of ExxonMobil class B Preferred Stock was convertible into 132.015 shares of ExxonMobil common stock. Dividends were cumulative and payable in an amount per share equal to \$300 per annum. In 1999, 1998, and 1997, Mobil Series B Convertible Preferred Stock totaling 6 thousand, 6 thousand, and 5 thousand shares, respectively, were redeemed. After the merger, 159 thousand shares of ExxonMobil Class B Preferred Stock totaling \$618 million were converted to ExxonMobil common stock. At year-end 1999, no shares of Class B Preferred Stock remained outstanding.

In 1989, Exxon sold 16.3 million shares of a new issue of convertible Class A Preferred Stock to its leveraged employee stock ownership plan (Exxon LESOP) trust for \$61.50 per share. The proceeds of the issuance were used by Exxon for general corporate purposes. If the common share price exceeded \$30.75, one share of Exxon Class A Preferred Stock was convertible into two shares of common stock. If the price was \$30.75 or less, one share of preferred stock was convertible into common shares having a value of \$61.50. Dividends were cumulative and payable in an amount per share equal to \$4.680 per annum. In 1999, 1998 and 1997, 1.7 million, 1.4 million and 1.8 million shares of Exxon Class A Preferred Stock totaling \$105 million, \$85 million and \$113 million, respectively, were converted to common stock. At year-end 1999, no shares of Class A Preferred Stock remained outstanding.

In 1989, \$1,800 million of benefit plan related balances were recorded as debt and as a reduction to shareholders' equity, representing Exxon and Mobil guaranteed borrowings by the Mobil ESOP and Exxon LESOP trusts to purchase preferred stock. As the debt is repaid and shares are earned by employees, the benefit plan related balances are being extinguished. Preferred dividends of \$36 million. \$60 million and \$69 million were paid during 1999, 1998 and 1997, respectively.

The table below summarizes the earnings per share calculations.

<TABLE>

1999 1998 1997 <C> <C> <C> <C>

<S>
Net income per common share

7.5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	the state of the s						
Income before cumulative effect of accounting change (m Less: Preferred stock dividends	illions of dollars)	Ş	7,910	\$	8,144 (60)	Ş	11,732
Income available to common shares		-	7,874		6.084	المعرف الم	11.663
***Come available to common shares			7,074	9		1,000	Selection and the selection of
		37	*******				
Weighted average number of common shares outstanding (m	illions of shares)		3,453		3,468		3.511
Net income per common share							
Before cumulative effect of accounting change Cumulative effect of accounting change		ş	2.28	\$	2,33	\$	3.32
and the present of accounting change							******
Net income		5	2.28	s	2.31	5	3.32
7.77 -4407-					********		
Net income per common share - assuming dilution							
* * * * * * * * * * * * * * * * * * * *	*****************						
Income before cumulative effect of accounting change (m Adjustment for assumed dilution	illions of dollars)	\$	7,910	\$	5,144	ş	11,732
Income available to common shares		5	7, 911	5	B,137	5	11,728
Percent and process of the percent and percent			******				
Weighted average number of common shares outstanding (m	illions of physics		3,453		3.468		3.511
Plus: Issued on assumed exercise of stock options	itizions of shates		44		39		41
Plus: Assumed conversion of preferred stock			21		26		29
						****	****
Weighted average number of common shares outstanding			3,518		3,533		3,581
The state of the tenth of the state of the s		**			*******		*****
Net income per common share							
Before cumulative effect of accounting change Cumulative effect of accounting change		\$	2.25	\$	(0.02)	ş	3.28
Control of the Contro		75		22542		****	****
Net income		9	2.25	\$	2.28	\$	2,120
41.042.42.42.42.42.42.42.43.43.43.43.43.43.43.43.43.43.43.43.43.			Yezadi				1.619
Dividends paid per common share							

 | 5 | 1.687 | ş | 1.666 | ş | 1.619 || | | | | | | | |
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14. Employee Stock Ownership Plans

In 1989, the Exxon leveraged employee stock ownership plan (Exxon LESOP) trust borrowed \$1,000 million under the terms of notes guaranteed by Exxon maturing between 1990 and 1999. As further described in note 13, the Exxon LESOP trust used the proceeds of the borrowing to purchase shares of Exxon's convertible class A Preferred Stock. The final Exxon LESOP note matured in 1999 with the final principal payment of the outstanding debt. All remaining shares of Exxon class A Preferred Stock were converted to ExxonMobil Common shares.

In 1989, the Mobil Oil Corporation employee stock ownership plan (Mobil ESOP) trust borrowed \$800 million under the terms of notes and debentures guaranteed by Mobil. As further described in note 13, the trust used the proceeds of the borrowing to purchase shares of Mobil's Series 8 Convertible Preferred Stock which upon the Merger were converted into shares of ExxonMobil Class 8 Preferred Stock with similar terms. By year-end 1999, all outstanding shares of Class 8 Preferred Stock were converted to ExxonMobil common shares.

Employees eligible to participate in ExxonMobil's Savings Plan may elect to participate in the Mobil ESOP. Corporate contributions to the plan and dividends are used to make principal and interest payments on the notes and debentures. As contributions and dividends are credited, common shares are allocated to participants' accounts. As debt service exceeded dividends, Exxomboil was required to fund the excess. The excess for the Mobil ESOP was \$19 million, \$15 million and \$21 million in 1999, 1998, and 1997 respectively.

Accounting for the plans follows the principles which were in effect for the respective plans when they were established. The amount of compensation expense related to the plans and recorded by the corporation during the periods was not significant. The Mobil ESOP trust held 165 thousand shares of Mobil Series B Convertible Preferred Stock at the end of 1998 and 21.6 million shares of ExxonMobil common stock at the end of 1999. The Exxon LESOP trust held 1.7 million shares of Exxon Class A Preferred Stock and 39.2 million shares of Exxon common stock at the end of 1998, and 38.4 million shares of ExxonMobil common stock at the end of 1998, and 38.4 million shares of ExxonMobil common stock at the end of 1998.

15. Pinancial Instruments

The fair value of financial instruments is determined by reference to various market data and other valuation techniques as appropriate. Long-term debt is the only category of financial instruments whose fair value differs materially from the recorded book value. The estimated fair value of total long-term debt, including capitalized lease obligations, at December 31, 1999 and 1998, was \$8.9 billion and \$9.7 billion, respectively, as compared to recorded book values of \$8.4 billion and \$8.5 billion.

The corporation's size, geographic diversity and the complementary nature of the upstream, downstream and chemicals businesses mitigate the corporation's risk from changes in interest rate, foreign currency rate and commodity prices. As a result, the corporation makes limited use of derivatives to hedge exposures arising from existing transactions. Prior to the merger, Mobil managed these exposures using defined benchmarks for hedging to achieve a desired risk profile for the environment in which Mobil operated and financed its assets. The contract positions related to these pre-merger activities are being phased down as such contracts are settled or mature. Derivative instruments are not held for trading purposes nor do they have leveraged features. In addition, they are either purchased or sold over authorized exchanges or with counterparties of high credit standing. As a result of the above factors, the corporation's exposure to credit risks and market risks from derivative activities is negligible.

The notional principal amounts of derivative financial instruments at December

(mil)	ions of dollars
4.000	TOUR OF GOITALR
Debt-related instruments \$ 2; Nondebt-related foreign currency	111 \$ 4,942
	245 7,791
	988 2,623

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

16. Long-Term Debt

At December 31, 1999, long-term debt consisted of \$7,545 million due in U.S. dollars and \$857 million representing the U.S. dollar equivalent at year-end exchange rates of amounts payable in foreign currencies. These amounts exclude that portion of long-term debt, totaling \$407 million, which matures within one year and is included in current liabilities. The amounts of long-term debt maturing, together with sinking fund payments required, in each of the four years after December 31, 2000. in millions of dollars, are: 2001 - \$931, 2002 - \$263, 2003 - \$816 and 2004 - \$2,260. Certain of the borrowings described may from time to time be assigned to other ExxonMobil affiliates. At December 31, 1999, the corporation's unused long-term credit lines were not material.

The total outstanding balance of defeased debt at year-end 1999 was \$475 million

Summarized long-term borrowings at year-end 1999 and 1998 were as follows:

	1	999		1	998
241141212557557	7	llions	**	40	11 ave
Exxon Mobil Corporation	Viat	TTTOHS	OL.	do	Tiars
7.45% Guaranteed notes due 2001	5	246		\$	246
Guaranteed zero coupon notes due 2004		- 3.2			777
- Face value (\$1,146) net of					
unamortized discount		671			601
					4.4
Exxon Capital Corporation					
6.0% Guaranteed notes due 2005		246			246
6.125% Guaranteed notes due 2008		250			250
Seakiver Maritime Financial Holdings, Inc.					
Guaranteed debt securities due 2001-2011(1)		122			129
Guaranteed deferred interest					
debentures due 2012					
- Face value (\$771) net of					
unamortized discount		728			653
Imperial Oil Limited					
8.3% notes due 2001		200			200
Variable rate notes due 2004(2)		600			600
8.75% notes due 2019		134			220
Mobil Oil Canada, Ltd.					
3.0% Swiss franc debentures due 2003(3)		331			330
5.0% U.S. dollar Europonds due 2004(4)		300			300
Mobil Producing Nigeria Unlimited					
8,625% notes due 2001-2006		229			250
Mobil Corporation					
8.625% debentures due 2021		247			250
7 625* debentures due 2033		213			216
Industrial revenue bonds due 2003-2033(5)	1	,429		1	421
ESOPTrust debentures/notes due 2001-2003		351			321
Other U.S. dollar obligations(6)	1	,045		1	040
Other foreign currency obligations		790			934
Capitalized lease obligations(7)		270			325
	144	*****			
Total long-term debt		402		4.00	532
	= 0		***	-	2355

- 1. Average effective interest rate of 4.7% in 1999 and 5.5% in 1998,
- Average effective interest rate of 5.3% in 1999 and 5.5% in 1998. Swapped into floating rate U.S.\$ debt.

- Swapped principally into floating rate debt.
 Average effective interest rate of 4.0% in 1999 and 4.1% in 1998.
 Average effective interest rate of 7.6% in 1999 and 7.6% in 1998.
 Average imputed interest rate of 7.2% in 1999 and 6.7% in 1998.

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17. Incentive Program

The 1993 Incentive Program provides for grants of stock options, stock The 1991 Incentive Program provides for grants of stock options, stock appreciation rights (SARs), restricted stock and other forms of award. Awards may be granted over a 10-year period to eligible employees of the corporation and those affiliates at least 50 percent owned. The number of shares of stock which may be awarded each year under the 1991 Incentive Program may not exceed seven tenths of one percent (0.7%), of the total number of shares of common stock of the corporation outstanding (excluding shares held by the corporation) on December 31 of the preceding year. If the total number of shares effectively granted in any year is less than the maximum number of shares allowable, the balance may be carried over thereafter. Outstanding awards are subject to certain forfeiture provisions contained in the program or award instrument. Options and SARs may be granted at prices not less than 100 percent of market value on the date of grant and have a maximum life of 10 years. Most of the options and SARs thus far granted first become exercisable after one year of continuous employment following the date of grant.

On the closing of the merger on November 30, 1999, outstanding options and SARs granted by Mobil under its 1995 Incentive Compensation and Stock Ownership Plan and prior plans were assumed by ExxonMobil and converted into rights to acquire ExxonMobil common stock with adjustments to reflect the exchange ratio. No further awards may be granted under the former Mobil plans.

Shares available for granting under the 1993 Incentive Program were 51,894 thousand at the beginning of 1999 and 15,194 thousand at the end of 1999. At December 31, 1998 and 1999, respectively, 946 thousand and 1,077 thousand shares of restricted common stock were outstanding.

Statement of Financial Accounting Standards No. 123, "Accounting for Stock-Based Compensation," was implemented in January 1996. As permitted by the Standard, ExxonMobil retained its prior method of accounting for stock compensation. If the provisions of Statement No. 123 had been adopted, net income and earnings per share (on both a basic and diluted basis) would have been reduced by \$149 million, or \$0.04 per share in 1999; \$134 million, or \$0.04 per share in 1998 and \$105 million, or \$0.03 per share in 1997. For the Exxon plan, the average fair value of each option granted during 1999, 1998 and 1997 was \$19.70, \$12.80 and \$11.36, respectively. The fair value was estimated at the grant date using an option-pricing model with the following weighted average assumptions for 1999, 1998 and 1997, respectively: risk-free interest rates of 6.2 percent. 4.8 percent and 5.8 percent; expected life of 6 years for all years: volatility of 15 percent, 13 percent and 12 percent and a dividend yield of 2.1 percent, 2.3 percent and 2.7 percent. For the Mobil plans, the average fair value of each Mobil option granted during 1999, 1998, and 1997 was \$17.02, \$13.05 and \$11.03, respectively. The fair value was estimated at the grant date using an option-pricing model with the following weighted average assumption for 1999, 1998, and 1997 respectively: risk-free interest rates of 5.2 percent. 5.7 percent and 6.4 percent; expected life of 5 years for all years; volatility of 20 percent. 18 percent and 16 percent and a dividend yield of 2.7 percent, 3.2 percent and 3.4 percent.

Changes that occurred in options outstanding in 1999, 1998 and 1997 (including the former Mobil plans) are summarized below (shares in thousands):

<TABLE>

		1999		1998		1997
	Shares	Avg, Exercis Price	se Shares	Avg. Exercise Price	Shares	Avg. Exercise Price
<s></s>	<c></c>	<c></c>	<c></c>	<c></c>	«C»	<c></c>
Outstanding at beginning of year	110,609	\$42.03	112,341	\$36.42	112,544	\$31.92
Granted	22,099	78.00	16,646	65.89	17, 197	55.17
Exercised	(11,250)	30.31	(17, 907)	28,65	(16,675)	26,06
Expired/Canceled	(342)	66.18	(471)	55.41	(725)	44.54
Outstanding at end of year	121,116	49.62	110,609	42.03	112,341	36.42
Exercisable at end of year						

 87,472 | 42,16 | 83,258 | 36 .76 | 85,510 | 32,22 |The following table summarizes information about stock options outstanding, including those from former Mobil plans, at December 31, 1999 (shares in thousands):

<TABLE>

	Options	Outstanding		Options	Exercisable	
Exercise Price Range	Shares	Avg. Remaining Contractual Life	Avg. Exercise Price	Shares	Avg. Exercise Price	
		****************	******	**********	******	*****************
<s></s>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	
\$25,13-33.07	41.692	3.5 years	\$29.26	41,692	\$29.26	
39.47-55.42	36,304	6.8	45.72	25,627	43.74	
58.36-83.56	43,120	9.1	72.59	20,153	66.86	
				(686489)		
Total 						

 121,116 | 6.5 | 49.62 | 87,472 | 42.16 | |F26

<PAGE>

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

18. Annuity Benefits and Other Postretirement Benefits

<TABLE>

			Annuity 1	Benefits	2010035512					Other Post
***** ** ******* * ** ***** * ********		U.S.			Non-U.S.			Benefits		vence 105
	1999	1998	1997	1999	1998	1997	1999	1998	1997	
Components of net benefit cost			**********	(mill:	ions of dol	lars)				
<s></s>	<c></c>	<0>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	
Service cost	\$ 249	\$ 229	\$ 209	\$ 312	\$ 297	\$ 294	\$ 36	\$ 34	\$ 37	
Interest cost	555	549	545	608	625	654	190	191	191	
Expected return on plan assets	(501)	(622)	(589)	(599)	(564)	(537)	(48)	(41)	(35)	

Amortization of actuarial loss/(gain) and prior service cost Net pension enhancement and curtailment/settlement expense

(36) (24) (37) 12 167 111 124 14 1 (6) LIN 28 50 S 192 5 196 \$ 202 \$ 168 \$ 133 \$ 122 \$ 538 5 468 9 563

</TABLE>

Net benefit cost

Costs for defined contribution plans were \$69 million, \$121 million and \$111 million in 1999, 1998 and 1997, respectively.

<TABLE>

			7	Annuity 1	Ben							
	-		U.S			Non-I	J.S		- Other Postreti Benefits			ement
	-	1999		1998	1	1999	-	1998	1	999	199	8
Change in benefit obligation		******			-	(millions		f dollar	01	******		******
<\$>	-	>	<0			C>		C>		C>	<0	-
Benefit obligation at January 1	5			8,147		12,572		10,713		2,932		2,886
Service cost	*	249	4	229	*	312		297		36	-	34
Interest cost		555		549		608		625		190		191
Actuarial loss/(gain)		(746)		523		(948)		1,224		(333)		44
Benefits paid		(859)		(832)		(814)		(682)		(259)		(211)
Foreign exchange rate changes		1000		10001		(171)		260		14		(18)
Other		125		92		59		135		40		6
Benefit obligation at December 31		8.032	\$	8.708	-	11,628		12,572	5	2,620	*	2.932
and the same of th		3 1 3 3 3					-	m		4.1		
Change in plan assets	-				7			7				
Fair value at January 1	5	6.604	s	7.023	\$	7,577	S	6,907	S	512	\$	447
Actual return on plan assets		2.083		884		1,467	3	785	100	104	3	117
Foreign exchange rate changes						14		31				
Payments directly to participants		138		109		305		221		172		169
Company contribution		**				167		300		42		34
Benefits paid		(859)		(832)		(814)		(682)		(259)		(211)
Other		(1)				(27)		15		(3)		(44)
Reclassification of supplemental benefit trust				(580)		-/-/		-6				
Fair value at December 31	\$	7,965	\$	6,604	\$	8,689	\$	7.577	\$	568	5	512
	-	SSBARGES		=======			==:					
Assets in excess of/(less than) benefit obligation												
Balance at December 31	\$	(67)	\$	(2,104)	\$	(2,939)	\$	(4,995)	\$	(2,052)	5	(2,420)
Unrecognized net transition liability/(asset)		(102)		(177)		42		36				
Unrecognized net actuarial loss/(gain)		(1,960)		247		(368)		1,547		(217)		189
Unrecognized prior service cost		338		306		310		430		5		11
Intangible asset		(33)		(103)		(81)		(191)				5.5
Equity of minority shareholders		6.4				(23)		(55)		-8		***
Minimum pension liability adjustment		(103)	000	(109)	53	(444)		(674)				
Prepaid/(accrued) benefit cost						(3,503)						
Annuity assets and reserves in excess of accumulated	44				-	*******		******				
benefit obligation	\$	2,833	\$	1,084	\$	1,760	\$	472				17
Assumptions as of December 31 (percent)												
Discount rate		7.75	6.	5-6.75		0-7.3	7	2.7-8.3		7,75	6	5-6-75
Long-term rate of compensation increase		1.5		.5-4.0		0-4.0		2.3-6.5		3.5		.5-4.0
Long-term rate of return on funded assets												

 | 9.5 | | 9.5 | | | | 0-10.0 | | 9.5 | | 9.5 |F27 <PAGE>

The data shown on the previous page are reported as required by current accounting standards which specify use of a discount rate at which postretirement liabilities could be effectively settled. The discount rate stipulated for use in calculating year-end postretirement liabilities is based on the year-end rate of interest on high quality bonds. For determining the funding requirements of U.S. annuity plans in accordance with applicable federal government regulations, ExxonMobil uses the expected long-term rate of return of the annuity fund's actual portfolio as the discount rate. This rate has historically been higher than bonds as the majority of pension assets are invested in equities. In fact, the actual rate earned over the past decade has been 15 percent. On this basis, all funded U.S. plans meet the full funding requirements of the Department of Labor and the Internal Revenue Service as detailed in the table below. Certain smaller U.S. plans and a number of non-U.S. plans are not funded because of local tax conventions and regulatory practices which do not encourage funding of these plans. Book reserves have been established for these plans to provide for future benefit payments.

<TABLE>

Status of U.S. annuity plans subject to federal government funding requirements	1999	1998	
	**********	****************	
	(millions o	f dollars)	
<s></s>	«C»	<c></c>	
Funded assets at market value less total projected benefit obligation pifferences between accounting and funding basis:	\$ (67)	\$(2,104)	
Certain smaller plans unfunded due to lack of tax and regulatory incentives	874	929	
Use of long-term rate of return on fund assets as the discount rate	1.061	1,786	
Use of government required assumptions and other actuarial adjustments	(1,086)	271	
	*******	******	
Funded assets in excess of obligations under government regulations	\$ 782	\$ 862	

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

19. Litigation and Other Contingencies

A number of lawsuits, including class actions, were brought in various courts against Exxon Mobil Corporation and certain of its subsidiaries relating to the accidental release of crude oil from the tanker Exxon Valdez in 1989. Essentially all of these lawsuits have now been resolved or are subject to appeal.

On September 24, 1996, the United States District Court for the District of Alaska entered a judgment in the amount of \$5.058 billion in the Exxon Valdez civil trial that began in May 1994. The District Court awarded approximately \$19.5 million in compensatory damages to fisher plaintiffs, \$38 million in prejudgment interest on the compensatory damages and \$5 billion in punitive damages to a class composed of all persons and entities who asserted claims for punitive damages from the corporation as a result of the Exxon Valdez grounding. The District Court also ordered that these awards shall bear interest from and after entry of the judgment. The District Court stayed execution on the judgment pending appeal based on a \$6.75 billion letter of credit posted by the corporation. The corporation has appealed the District Court's denial of its remewed motion for a new trial. The united States Court of Appeals for the Ninth Circuit heard oral arguments on the appeals on May 3, 1999. The corporation continues to believe that the punitive damages in this case are unwarranted and that the judgment should be set aside or substantially reduced by the appellate courts.

On January 19, 1997, a settlement agreement was concluded resolving all remaining matters between the corporation and various insurers arising from the Valdez accident. Under terms of this settlement, ExxonMobil received \$480 million. Final income statement recognition of this settlement continues to be deferred in view of uncertainty regarding the ultimate cost to the corporation of the Valdez accident.

The ultimate cost to ExxonMobil from the lawsuits arising from the Exxon Valdez grounding is not possible to predict and may not be resolved for a number of years.

Under the October 8, 1991, civil agreement and consent decrees with the U.S. and Alaska governments, the corporation has made annual payments since 1991, which in each of the years 1999, 1998 and 1997, were \$70 million. These payments were charged against the provision that was previously established to cover the costs of the settlement.

German and Dutch affiliated companies are the concessionaires of a natural gas field subject to a treaty between the governments of Germany and the Netherlands under which the gas reserves in an undefined border or common area are to be shared equally. Entitlement to the reserves is determined by calculating the amount of gas which can be recovered from this area. Based on the final reserve determination, the German affiliate has received more gas than its entitlement. Arbitration proceedings, as provided in the agreements, were conducted to resolve issues concerning the compensation for overlifted gas.

By final award dated July 2, 1999, preceded by an interim award in 1996, an arbitral tribunal established the full amount of the compensation for the excess gas. This amount has now been paid, but the Dutch affiliate is seeking to have the award set aside. Other substantive matters remain outstanding, including recovery of royalties paid on such excess gas and the taxes payable on the final compensation amount. The ultimate outcome is not expected to have a materially adverse effect upon the corporation's operations or financial condition.

The U.S. Tax Court has decided the issue with respect to the pricing of crude oil purchased from Saudi Arabia for the years 1979-1981 in favor of the corporation. This decision is subject to appeal. Certain other issues for the years 1979-1988 remain pending before the Tax Court. The ultimate resolution of these issues is not expected to have a materially adverse effect upon the corporation's operations or financial condition.

Claims for substantial amounts have been made against ExxonMobil and certain of its consolidated subsidiaries in other pending lawsuits, the outcome of which is not expected to have a materially adverse effect upon the corporation's operations or financial condition.

The corporation and certain of its consolidated subsidiaries were contingently liable at December 31, 1999, for \$1,860 million, primarily relating to guarantees for notes, loans and performance under contracts. This includes \$1,046 million representing guarantees of non-U.S. excise taxes and customs duties of other companies, entered into as a normal business practice, under reciprocal arrangements, Not included in this figure are guarantees by consolidated affiliates of \$1,461 million, representing ExxonMobil's share of obligations of certain equity companies.

Additionally, the corporation and its affiliates have numerous long-term sales and purchase commitments in their various business activities, all of which are expected to be fulfilled with no adverse consequences material to the corporation's operations or financial condition.

The operations and earnings of the corporation and its affiliates throughout the world have been, and may in the future be, affected from time to time in varying degree by political developments and laws and regulations, such as forced divestiture of assets; restrictions on production, imports and exports; price controls, tax increases and retroactive tax claims; expropriation of property; cancellation of contract rights and environmental regulations. Both the likelihood of such occurrences and their overall effect upon the corporation vary greatly from country to country and are not predictable.

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20. Income, Excise and Other Taxes

«TABLE:

	660			1999						1998						1997		وملاد
		nited tates		Non- U.S.		Total		nited tates		Non- U.S.	9	rotal		United States		Non- U.S.		rotal
	**		•••	*******				(mil	lion	s of do	11a	rs)		****		******		
<s> Income taxes</s>	«C	•	<	C>		C>	eC		<0			i>	e(S		C>	*	C>
Federal or non-U.S. Current Deferred - net U.S. tax on non-U.S. operations	\$	369 214 25	\$	3,973 (1,489)	\$	4,342 (1,275) 25	\$	801 196 43	ş	2,753 5	\$	3,554 201 43	ş	1,366 415 59	*	4,889 669	\$	6,255 1,084 59
State	\$	608 148	9	2,484	5	3,092	\$	1,040	\$	2,758	\$	3,798	s	1,840	ş	5,558	5	7.398
Total income taxes Excise taxes All other taxes and duties	\$	756 7,795 1,021	\$	2,484 13,851 35,616	\$	3.240 21.646 36,637	\$	1,181 7,459 967		2,758 13,467 34,084	5	3,939 20,926 35,051	\$	2,047 7,063 1,163	5	5,558 14,120 34,803	\$	7,605 21,183 35,966
Total	\$	9,572	\$	51,951	5	61,523	\$	9,607	\$	50,309	\$	59,916	\$	10,273	ş	54,481	\$	64,754

 201 | 995700 | | | | ******* | 8885 | ******** | | ******* | | | 1 | ****** | | ****** | see | PF-9-PF |All other taxes and duties include taxes reported in operating and selling, general and administrative expenses. The above provisions for deferred income taxes include net credits for the effect of changes in tax laws and rates of \$205 million in 1999, \$153 million in 1998 and \$147 million in 1997. Income taxes (charged)/credited directly to shareholders' equity were:

	1999		1998	1	997	
	 	illions	of dolla	rs)		
Cumulative foreign exchange						
translation adjustment	\$ (84)	\$	(21)	5	246	
Minimum pension liability		- 7				
adjustment	(127)		375			
Unrealized gains on stock	12271					
investments	(45)		4		4	
Other components of						
shareholders' equity	50		88		67	

The reconciliation between income tax expense and a theoretical U.S. tax computed by applying a rate of 35 percent for 1999, 1998 and 1997, is as follows:

	1999	1998	1997
	*********	***********	**********
and the female of the state of the state of	(m	illions of dolla	rs)
Parnings before Federal and			
non-U.S. income taxes United States		4 0.044	4 - 2 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -
Non-U.S.	9 3,187	\$ 3,451	\$ 6.094
NOII-U.S.	7,815	8,491	13,036
Total	\$ 11,002	\$ 11,942	5 19,130
10001	9 11,002	2 11,242	\$ 13,130
oretical tax	\$ 3,851	\$ 4,180	\$ 6,696
ect of equity method accounting	(576)	(529)	(560)
-U.S. taxes in excess of			
theoretical U.S. tax	201	256	1,476
tax on non-U.S. operations	25	43	59
er U.S.	(409)	(152)	(273)
	*********	***********	
eral and non-U.S. income			
tax expense	\$ 3,092	\$ 3,798	\$ 7,398
Total effective tax rate	31.8%	35.21	41.11

The effective income tax rate includes state income taxes and the corporation's share of income taxes of equity companies. Equity company taxes totaled \$449 million in 1999, \$492 million in 1998 and \$566 million in 1997, essentially all outside the U.S.

Deferred income taxes reflect the impact of temporary differences between the amount of assets and liabilities recognized for financial reporting purposes and such amounts recognized for tax purposes.

Deferred tax liabilities/(assets) are comprised of the following at December 31:

for: 1999	1998	
(millions	of dollars)	
\$ 14,118	\$ 14,252	
3,371	3,296	
1,500		
	3,039	
	~~~~	
5 21,017	5 22,019	
**********		
efits \$ (2,070)	5 (2,138)	
**********	******	
\$ (5,966)	\$ (5.536)	
651	724	
	*******	
\$ 15,702	5 17, 207	
200088888222		
	(millions \$ 14,118 3,371 1,500 2,028 \$ 21,017 efits \$ (2,070) (1,701) (2,195) \$ (5,966)	(millions of dollars)  \$ 14,118 \$ 14,252 3,371

1 1 11 - 10 1000/0000000000 00 00 000FFC 1 1

The corporation had \$11.1 billion of indefinitely reinvested, undistributed

earnings from subsidiary companies outside the U.S. Unrecognized deferred taxes on remittance of these funds are not expected to be material.

EPAGE>

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

21 Disclosures about Segments and Related Information

The functional segmentation of operations reflected below is consistent with ExxonMobil's internal reporting. Earnings are before the cumulative effect of accounting changes and include special items. Transfers are at estimated market prices. The interest revenue amount relates to interest earned on cash deposits and marketable securities. Interest expense includes non-debt related interest expense of \$123 million. \$81 million and \$121 million in 1999, 1998 and 1997, respectively. All Other includes smaller operating segments, corporate and financing activities and merger expenses

<TABLE>

	Ups	tream	Down	stream	Chem	icals	A11	Corporate
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.	Other	Total
		******		(míllio	ns of dolla	rs)	*******	**********
<s></s>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>
As of December 31, 1999								
Earnings after income tax	\$ 1,842	5 4,044	\$ 577	\$ 650	\$ 738		\$ (557)	\$ 7,910
Earnings of equity companies included above	299	881	В	148	49	83	178	1,646
Sales and other operating revenue	3,104	11,353	43,376	109,969	6,554	7,223	950	182,529
Intersegment revenue	3,925	9,093	2.867	5,387	1,624	1,317	796	
Depreciation and depletion expense	1,330	3,497	697	1,670	402	274	434	8,304
Interest revenue	44		44	2.0		-	153	153
Interest expense	276			**		85	695	695
Income taxes	1,008	2,703	343	(22)	338	63	(1,193)	3,240
Additions to property, plant and equipment	1,440	5,025	630	1,201	600	1,093	660	10,849
Investments in equity companies	1,171	2,647	280	3,304	429	1,537	38	9,406
Total assets	18,211	40,906	13,699	43,718	7,605		10,551	144,521
As of December 31, 1998								
Barnings after income tax	\$ 850	\$ 2,502	\$ 1,199	\$ 2,275	5 792	5 602	5 (76)	\$ 8,144
Earnings of equity companies included above	92	955	69	126	7	7	194	1,510
Sales and other operating revenue	3,017	10,493	36,642	100,957	5,940	7,649	929	165,627
Intersegment revenue	2,957	6,313	2,124	4,828	2,101	1,250	798	***
Depreciation and depletion expense	1,682	3,330	706	1,516	402	338	361	8,355
Interest revenue	746	440			64	194	185	185
Interest expense	- 65	4-				4.5	568	568
Income taxes	476	1,490	666	1,204	329	132	(358)	3,939
Additions to property, plant and equipment	1,836	5,646	1.035	1.718	622	1,121	752	12,730
Investments in equity companies	1,161	2,523	313	3,345	365	1,058	61	8,826
Total assets	18,130	39,094	12,585	42.790	7,224	8,898	10,614	139,335

</TABLE>

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<TABLE>

	Upsti	eam	Downs	ream	Chem	icals	AII	Corporate	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.	Other	Total	
	101-0310-00310-0			(million	ns of dollars)		0750	Section 1	
<s> As of December 31, 1997</s>	«C»	<c></c>	<c></c>	<c></c>	<c></c>	«C»	«C>	<c></c>	
Earnings after income tax	\$ 2,331	\$ 4,574	\$ 1,135	\$ 1,953	\$ 1,056	5 715	\$ (32)	\$ 11,73	
Earnings of equity companies included above	175	1,044	45	295	12	134	(106)	1,59	
Sales and other operating revenue	3.672	12,976	44,737	117,752	7,044	9,146	2.408	197,73	
Intersegment revenue	5,053	9,694	2,760	7,041	2,509		910		
Depreciation and depletion expense	1,554	3,101	773	1,542	364	295	599	8,22	
Interest revenue	195	- 0	-	-			374	37	
Interest expense	36				-		863	86	
Income taxes	1,313	4,065	635	1,167	473	393	(441)	7,605	
Additions to property, plant and									
equipment	1,776	5,013	935	1,957	534	547	890	11,652	
Investments in equity companies	748	2,229	608	3,251	217	683	41	7,977	
Total assets	18,261	36,893	13,280	42,663	7,077	7,789	17,788	143,751	

</TABLE>

<TABLE>

Geographic Sales and other operating revenue 1999 1998 1997 (millions of dollars) <C> \$ 53,214 <C> \$ 45,783 United States Non-U.S. \$ 55,665 129,315 119,844 142,070 Total \$182,529 \$197,735 \$165,627 «CAPTION» «C» «C> ces Significant non-U.S. revenue sources include: Japan United Kingdom \$ 19,727 16,305 12,670 \$ 22,982 \$ 27,468 16,933 14,765 16,012 Germany <CAPTION> Long-lived assets 1999 1998 1997 (millions of dollars) <C> <C> \$ 33,597 <C> \$ 33,690 United States \$ 33,913 Non-U.S. 60,130 58,986 59,837 Total \$ 94,043 \$ 92,583 \$ 93.527 «CAPTION» «C» «C» «C> Significant non-U.S. long-lived assets include: United Kingdom Canada \$ 10,293 \$ 11,112 \$ 10,838 8,404 6,545 7,526 6,055 7,778 5,688 Japan </TABLE>

SUPPLEMENTAL INFORMATION ON OIL AND GAS EXPLORATION AND PRODUCTION ACTIVITIES

<TABLE>

<PAGE>

Consolidated Subsidiaries

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	-															
		Charles.												ion-		G/4.7*
sults of Operations		United		and a		I.ovo.	904	0.4050		6.400				lidated	-	Total
sures or operacions		States	C	anada		Europe	AS1	a-Pacific		Other		Total	Int	erests	W	orldwide
		sicercia		apprace.			· Ind	llions of	1	(12mm)	-					******
	- 3	C>	<0		-	C>	<c></c>	IIIONS OI	<0			C>	«C»		-	C>
9 - Revenue	-	-	-				ccs		er			.>	ccs		-	
Sales to third parties	6	2,419	s	925	s	3,287	s	2,160	5	191		8.982	Ś	2,123	*	11,105
Transfers	3.	3,237	~	848	*	2,965	~	1,250	*	1,903		10,203	-	867	*	11,070
500000 528		******		440		.,,,,,		2,230		1,502		10,203		007		
	8	5,656	S	1,773		6,252	5	3.410	5	2,094	4	19, 185	5	2,990	S	22,175
Production costs excluding taxes		1,347	*	504		1,499		566	7	551	7	4,467		617		5,084
Exploration expenses		232		93		280		144		497		1,246		29		1,275
Depreciation and depletion		1,260		486		1,932		678		491		4,847		443		5,290
Taxes other than income		425		31		246		288		24		1,014		591		1,605
Related income tax		893		252		929		521		529		3,124		546		3,670
														3225		
Results of producing activities	s	1.499	Ś	407	5	1,366	S	1,213	5	2	S	4,487	5	754	s	5,251
Other earnings*		42	7	32	*	391		6	*	(19)	*	452		183	*	635
A COLD SECTION	-													*******		
Total earnings	\$	1,541	5	439	5	1,757	5	1,219	\$	(17)	5	4,939	\$	947	Ś	5,886
100000000000000000000000000000000000000	50	200		10.00		- N 00 0					-	14.67.02		14.4	- 10	D A C A T
- Revenue																
Sales to third parties	\$	2,297	\$	603	\$	3,427	5	1,893	\$	32	\$	8,252		2.385	\$	10,637
Transfers		2,343		526		1,956		928		1.544	-	7,297		537		7,834
	\$	4,640	\$	1,129	\$	5.383	\$	2,821	S	1,576	S	15,549	\$	2,922	\$	18,471
Production costs excluding taxes		1,505		501		1,731		514		730		4,981		542		5,523
Exploration expenses		317		74		299		210		600		1,500		69		1,569
Depreciation and depletion		1,649		423		1,726		813		451		5,062		388		5,450
Taxes other than income		343		40		195		164		26	L	768		595		1,363
Related income tax		313		(49)		499		509		226		1,498		513		2,011
	190	****				******										*****
Results of producing activities	\$	513	\$	140	\$		\$	611	\$	(457)	\$	1,740	\$	815	\$	2,555
Other earnings*		269		51		556		5		(2)		879		(82)		797
Albert Constitution	133			*******	****	*****	****	*******		******		******				
Total earnings	5	782	\$	191		1,489	\$	616	\$	(459)		2,619	\$	733		3,352
Revenue	==			********	4501		BEE			******	up-s:					
	-	0.202	4	222			- 5	2	2	44	- 2	12000	-	41322	-	22 433
Sales to third parties Transfers	S	2,784	\$	780	\$	4,130	\$		\$	30	\$	10,702	5	2.870	\$	13,572
Transfers		4,357		688		2,900		1,584		2,203		11,732		580		12,312
		* ***						4 660	-	0.011				3 450		
Production costs excluding taxes	4	7,141	3	1.468	3	7,030	7	4,562	2	2,233	2	22,434	4	3,450	4	25,884
Exploration expenses		1,653		557		1,590		628		687		5,115		448		5,563
Depreciation and depletion		206		53		332		235		420		1.246		89		1,335
Taxes other than income		1,525		430		1,648		757		324		4,684		308		4,992
Related income tax		565		38		199		374		34		1,210		866		2,076
retated income cax		1,110		151		1,609		1,033		834		4,737	0.0	724		5,461
Results of producing activities		2,082	5	239	775	1.652		1,535	5	(66)		5,442		1,015		6,457
Other earnings*	4	128	9	77	*	216	4		9		2	495	9		4	
Same carnings		126	0.0	11		216		36		38		495	San	(47)		448
Total earnings	*	2,210	*	316		1.868	0	1,571	5	(28)		5,937	s	968		6,905
- Done Contracting	42		440	310										300		0,000

</TABLE>

<TABLE>

Average sales prices and production costs per unit of production «C» «C» cCa. «C» eC> eCs. «C> <C> During 1999 Average sales prices Crude oil and NGL, per barrel Natural gas, per thousand cubic feet \$ 14.96 14.47 \$ 16.59 17.96 14.94 \$ 15.79 \$ 14.52 \$ 15.65 2.21 1.61 2.25 1.88 1.21 2,15 Average production costs, per barrel**
During 1998 3.42 2.40 3.02 Average sales prices Average sales prices
Crude oil and NGL, per barrel
Natural gas, per thousand cubic feet
Average production costs, per barrel**
During 1997 \$ 12.23 11.29 10.72 \$ 9.87 \$ 8.29 12.59 13.10 2.01 3.55 1.27 1.24 3.03 2.62 1.50 1.99 3.71 4.48 1.97 Average sales prices Crude oil and NGL, per barrel \$ 17.32 \$ 15.88 2.37 18.47 17.42 16.09 13 13 \$ 18.85 20.20 Natural gas, per thousand cubic feet Average production costs, per barrel** 2.39 2.56 3.55 3.54 2.43 4.48 4.16 2.18 5.55

- Includes earnings from transportation operations, tar sands operations, LNG operations, technical services agreements, other non-operating activities and adjustments for minority interests.
- Production costs exclude depreciation and depletion and all taxes. Natural gas included by conversion to crude oil equivalent.

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Oil and Gas Exploration and Production Costs

The amounts shown for net capitalized costs of consolidated subsidiaries are \$4,593 million less at year-end 1999 and \$3,402 million less at year-end 1998 than the amounts reported as investments in property, plant and equipment for exploration and production in note 11. This is due to the exclusion from capitalized costs of certain transportation and research assets and assets relating to the tar sands and LNG operations, and to the inclusion of accumulated provisions for site restoration costs, all as required in Statement of Financial Accounting Standards No. 19.

The amounts reported as costs incurred include both capitalized costs and costs charged to expense during the year. Total worldwide costs incurred in 1999 were \$7,759 million, down \$1,616 million from 1998, due primarily to lower development costs. 1998 costs were \$9,175 million, up \$711 million from 1997, due primarily to higher development costs.

<TABLE>

Consolidated Subsidiaries

				COL	301	LUBLEU .	Juus.	TOTALLES									
				******					***	******				on-			
CONTRACTOR CONTRACTOR		ited		S			955			Sales S	- 5	512		lidated		Total	
apitalized costs	St	ates		anada		urope	ASI	a-Pacifi	C	other	T	otal	Int	erests	WC	orldwide	
110101000000000000000000000000000000000																	
								ions of									
5>	<c></c>		<0	<b>'&gt;</b>	<(	>	<(	C>	<(	>	<c< td=""><td>&gt;</td><td>&lt;0</td><td>&gt;</td><td>40</td><td>.&gt;</td><td></td></c<>	>	<0	>	40	.>	
of December 31, 1999		v 200	-	6.055	- 5	1112	1.0	62.	-	4 355					1.5		
Property (acreage) costs - Proved	\$ 4	4,606	ş	2,952	\$	207	\$		ş	1,351	\$ -	10,047			Ş	10,061	
- Unproved		664		214		59		926		916		2,779		3		2,782	
Total property costs		5,270		3,166	s	266		1,857		2,267		12,826	\$	17	3003	12,843	
Producing assets		0.708	4	4,499	4	28,669		11,526	4	4,442		79,844		5,294		85.138	
Support facilities		795		115		580		1,007		1,166		3,663		145		3,808	
Incomplete construction		1,093		2.226		1,828		651		754		6,562		695		7,257	
Automotive or and the same of	-00			******		-,040					إياليان					25.5	
Total capitalized costs	\$ 37	7,866	\$	10,006	\$	31,343	\$	15,041	\$	8,639	\$10	2,895	\$	6,151	\$1	09,046	
Accumulated depreciation and depletion		3,953		4,401		18,680	1	9,248	90	3,106		59,388		2,872		62,260	
Net capitalized costs	\$ 13	3,913	ş	5,605	\$	12,663	\$	5,793	\$	5,533	\$ 4	13,507	5	3,279	\$	46,786	
	****	*****			2200			******	-	******			****	*****		*****	
of December 31, 1998 Property (acreage) costs - Proved	-		-		-	***	12	824				9.877	- 2	4.5			
- Unproved	\$ 9	683	ş	2,778	\$	208 56	\$	995	\$	1,349	\$	2,337		14	\$	9,891 2,352	
- Onproved	5000	683		212		56				391	فالفلاك					2,352	
Total property costs		5,401	8	2,990	5	264	s	1,819		1,740				29		12.243	
Producing assets		. 451	~	3,910	200	27,171		10,322		4,003		74,857		5.029		79.886	
Support facilities		890		107		655		987		753		3,392		279		3.671	
Incomplete construction	1	. 274		1,636				200 100 100 100		706		7,907		748		8,655	
							440			~					-		
Total capitalized costs	\$ 27	7,016	\$	8,643	\$	31,259	\$	14,250	\$	7,202	\$ 5	B, 370	\$	6,085	\$1	04,455	
Accumulated depreciation and depletion	22	,923		3,651		17,457		8,360		2,481		4.872		2,628		57,500	
Net capitalized costs		, 093						5,890									
	-	*****				*****	-		===					******	-		
sts incurred in property acquisitions, es																	
ses incurred in propercy acquisitions, es												22.12		E COLLE			ALCO IU.
ALTER ALTER AND								******						37770	-		
ring 1999																	
Property acquisition costs - Proved	s	2	\$	100	s	1	\$	18	S	1.8	5	19	s	-	\$	19	
- Unproved		8		5		8		-		529		550		4.		550	
Exploration costs		263				248		152		571		1,340		38		1,378	
Development costs	1	, 263		787		1,822		576		955		5,403		409		5,812	
The Address of the State of the	224	*****						******								*****	
Total	\$ 1	,534	\$	898	\$	2,079	5	746	\$	2,055	\$	7,312	\$	447	\$	7,759	
	****		-	*****		******		-	-	*******		-				PESSON	

Property acquisition costs	- Proved	\$	21	\$	2	\$	(A)	\$	1	\$ 	\$	24	ş	100	\$	24
	- Unproved		100		9		13		4	165		291		14		291
Exploration costs	The second		409		79		392		258	709		1.847		127		1,974
Development costs			1,469		731		2,596		757	870		6,423		663		7,086
		4.				-				 				****		
Total		\$	1,999	\$	821	5	3,001	\$	1,020	\$ 1,744	\$	8,585	\$	790	5	9.375
		-	-	or and the owner	*****		negunes.	-	2000000	 		Berwoon		nearle.	****	****
During 1997																
Property acquisition costs	- Proved	5	7	5		5	55	\$	8	\$ 53	5	123	\$	2	5	125
	- Unproved		130		20				6	51		217		5		222
Exploration costs			342		57		460		254	544		1,657		123		1,780
Development costs			1,442		622		2,069		892	912		5,937		600		6,537
		7:	******				******		******	 				******		****
Total		\$	1,921	5	699	\$	2,584	5	1,160	\$ 1,570	\$	7,934	\$	730	\$	8,664
<td></td> <td>05</td> <td>******</td> <td>****</td> <td></td> <td></td> <td></td> <td>-</td> <td>*******</td> <td> </td> <td>****</td> <td></td> <td></td> <td>******</td> <td></td> <td></td>		05	******	****				-	*******	 	****			******		

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<PAGE>

SUPPLEMENTAL INFORMATION ON OIL AND GAS EXPLORATION AND PRODUCTION ACTIVITIES

Oil and Gas Reserves

The following information describes changes during the years and balances of proved oil and gas reserves at year-end 1997, 1998 and 1999.

The definitions used are in accordance with applicable Securities and Exchange Commission regulations.

Proved oil and gas reserves are the estimated quantities of crude oil, natural gas and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e., prices and costs as of the date the estimate is made. Prices include consideration of changes in existing prices provided only by contractual arrangements, but not on escalations based upon future conditions. In some cases, substantial new investments in additional wells and related facilities will be required to recover these proved reserves.

Proved reserves include 100 percent of each majority owned affiliate's participation in proved reserves and ExxomMobil's ownership percentage of the proved reserves of equity companies, but exclude royalties and quantities due others. Gas reserves exclude the gaseous equivalent of liquids expected to be removed from the gas on leases, at field facilities and at gas processing plants. These liquids are included in net proved reserves of crude oil and natural gas liquids.

<TABLE>

Consolidated Subsidiaries

Crude Oil and Natural Gas Liquids	United States	Canada	Europe	Asia-Pacific	Other	Total	Non- Consolidated Interests	Total Worldwide	
				(millione	of barrels				
<\$>	<c></c>	«C»	<c></c>	<c></c>	«C»	<c></c>	<c></c>	«C»	
Net proved developed and undeveloped reserves	199	.,	-	285			-0.49		
January 1, 1997	3,194	1,333	1,973	878	1,971	8,849	1,272	10,121	
Revisions	(180)		52	75	19	(34)	609	575	
Purchases	2	1	16			19		19	
Sales	(26)	(66)	(11)	(9)	+	(112)	(5)	(117)	
Improved recovery	117	8	12		- 4	137	140	137	
Extensions and discoveries	81	4.0	61	21	211	414	36	450	
Production	(272)	(88)	1228)	(127)	(119)	(834)	(72)	(906)	
ecember 31, 1997	2,916	1,228	1,875	838	1,582	8,439	1,840	10,279	
Revisions	73	(23)	13	41	241	345	117	462	
Purchases		-		. 41	+				
Sales	(5)	(5)	-	4	-	(10)	(3)	(13)	
Improved recovery	17	9	21	2	1	48	85	133	
Extensions and discoveries	37	43	27	24	832	963	23	986	
Production	(234)	(98)	(228)	(117)	(125)	(802)	(92)	(894)	
ecember 31, 1998	2,804	1,154	1,708	786	2,531	8,983	1,970	10,953	
Revisions	96	19	96	23	134	366	25	393	
Purchases	18	-		F					
Sales	(3)		-		-	(3)	(9)	(12)	
Improved recovery	7	1	15		3	26	72	98	
Extensions and discoveries	58	277	174	18	193	720		720	
Production	(213)	(96)	(232)	(112)	(137)	(790)	(102)	(892)	
ecember 31, 1999	2,749	1,355	1,761	715	2,724	9,304	1,956	11,260	
developed reserves, included above									
At December 31, 1997	2,573	659	982	689	911	5,814	1,286	7,100	
At December 31, 1998	2,470	594	884	673	1,089	5,710	1,383	7,093	
At December 31, 1999 /TABLE>	2,383	608	1,086	615	1,234	5,926	1,333	7,259	
1 statement									

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Net proved developed reserves are those volumes which are expected to be recovered through existing wells with existing equipment and operating methods. Undeveloped reserves are those volumes which are expected to be recovered as a result of future investments to drill new wells, to recomplete existing wells and/or to install facilities to collect and deliver the production from existing and future wells.

Reserves attributable to certain oil and gas discoveries were not considered proved as of year-end 1999 due to geological, technological or economic uncertainties and therefore are not included in the tabulation.

Crude oil and natural gas liquids and natural gas production quantities shown are the net volumes withdrawn from ExxonMobil's oil and gas reserves. The natural gas quantities differ from the quantities of gas delivered for sale by the producing function as reported on page F39 due to volumes consumed or flared and inventory changes. Such quantities amounted to approximately 268 billion cubic feet in 1997, 242 billion cubic feet in 1998 and 191 billion cubic feet in 1999.

<TABLE>

Consolidated Subsidiaries

atural Gas	United States	Canada	Europe	Asia-Pacific	Other	Total	Non- Consolidated Interests	Total Worldwide
*****	*******				******	*******		
				(billions of	cubic feet)			
S>	<c></c>	<c></c>	«C»	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>
et proved developed and undeveloped								
eserves								
January 1, 1997	14.549	3,613	11.841	9,615	352	39,970	18,635	58,605
Revisions	(201)	(120)	275	152	135	241	534	7.75
Purchases	3		67	4,00		70		70
Sales	(122)	(147)	(7)	(119)	90	(395)	(126)	(521)
Improved recovery	23	70	30		2.	123		123
Extensions and discoveries	476	219	522	1,687	55	2,959	1,319	4,278
Production	(1,247)	(283)	(981)	(1,024)	(36)	(3,571)	(674)	(4,245)
								*******
December 31, 1997	13,481	3,352	11,747	10.311	506	39,397	19,688	59,085
Revisions	643	(87)	456	245	99	1,356	184	1,540
Purchases	-	10			7.	10		10
Sales	(52)	(47)	(10)	(4)	+	(113)	(34)	(147)
Improved recovery	3	57	20	. 7		80	34	114
Extensions and discoveries	195	503	191	362	171	1,422	99	1,521
Production	(1,213)	(299)	(1,003)	(916)	(48)	(3,479)	(638)	(4,117)
and the second second			.,			*******		
December 31, 1998	13,057	3,489	11,401	9,998	728	38,673	19,333	58,006
Revisions	781	31	680	131	42	1,665	142	1,807
Purchases		4		-			× 1	
Sales	(18)	(1)	- (A	9	811	(19)		(19)
Improved recovery	2	14	105	~	84	121	161	282
Extensions and discoveries	305	207	192	44	64	812	61	873
Production	(1,126)	(353)	(1,150)	(815)	(55)	(3,499)	(654)	(4,153)
December 31, 1999		****		* ***	779	37,753	19,043	56,796
December 31, 1999	13,001	3,387	11,228	9,358	779	37,753	19,043	36,736
Developed reserves, included above								
At December 31, 1997	10,993	2,297	8,033	7,029	288	28,640	7.407	36,047
At December 31, 1998	10,690	2,254	7,939	6,871	391	28,145	7,967	36,112
At December 31, 1999	10.820	2,475	7,764	6,471	428	27,958	8,643	36,601

INFORMATION ON CANADIAN TAR SANDS PROVEN RESERVES NOT INCLUDED ABOVE

In addition to conventional liquids and natural gas proved reserves, ExxonMobil has significant interests in proven tar sands reserves in Canada associated with the Syncrude project. For internal management purposes, ExxonMobil views these reserves and their development as an integral part of total Upstream operations. However, U.S. Securities and Exchange Commission regulations define these reserves as mining related and not a part of conventional oil and gas reserves.

The tar sands reserves are not considered in the standardized measure of discounted future cash flows for conventional oil and gas reserves, which is found on page F37.

Tar Sands Reserves Canada

[millions of barrels]

At December 31, 1997
At December 31, 1998
At December 31, 1999
577

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SUPPLEMENTAL INFORMATION ON OIL AND GAS EXPLORATION AND PRODUCTION ACTIVITIES

Standardized Measure of Discounted Future Cash Flows

As required by the Financial Accounting Standards Board, the standardized measure of discounted future net cash flows is computed by applying year-end prices, costs and legislated tax rates and a discount factor of 10 percent to net proved reserves. The corporation believes the standardized measure is not meaningful and may be misleading.

<TABLE>

Consolidated Subsidiaries

	*********	*********	*********	**********	********	******		
	United States	Салада	Europe	Asia-Pacific	Other	Total	Non- Consolidated Interests	Total Worldwide
	**********	**********	*********	(millions of	dollars)	********	2	***************************************
<s> As of December 31, 1997</s>	<c></c>	<c></c>	<c></c>	<c></c>	«C»	<c></c>	«C»	<c></c>
Future cash inflows from sales of oil and gas	\$ 66.893	\$ 14,736	\$ 59,486	\$ 35,528	\$ 26,603	\$203,246	\$ 76,610	\$279,856

Puture production costs	21,239	5.873	16,025	11,172	7,462	61.771	33,941	95,712
Future development costs	4,232	2,372	6,319	5,010	3, 137	21,070	3,260	24,33
Future income tax expenses	14.280	2,413	17,508	7,656	9,222	51,079	14,609	65,688
and the state of t	******							
Future net cash flows	\$ 27,142	\$ 4,078	\$ 19,634	\$ 11,690	\$ 6,782	\$ 69,326	\$ 24,800	\$ 94,126
Effect of discounting net cash								
flows at 10%	13.032	1,707	7,237	5, 177	2,832	29,985	15,877	45,862
Discounted future net cash flows	\$ 14,110	\$ 2,371	\$ 12,397	\$ 6,513	5 3,950	5 39,341	\$ 8,923	\$ 48.264
		2.5					71	
As of December 31, 1998					escore, and a series			
Puture cash inflows from sales								
of oil and gas	\$ 45,618	5 13,255	5 42,408	\$ 21,640	\$ 23,428	\$146,349	\$ 62,642	\$208,991
Puture production costs	18,946	4.567	14,926	8,679	8,828	55,946	28,343	84,289
Future development costs	4.066	2,012	5,668	3,490	5,116	20,352	3,393	23,745
Future income tax expenses	7,359	2,411	8,290	2,725	3,252	24,037	11,734	35,771
•	********		21,000					
Future net cash flows	\$ 15,247	\$ 4,265	\$ 13,524	\$ 6.746	\$ 6,232	\$ 46,014	\$ 19,172	\$ 65,186
Effect of discounting net cash	iv -circo	e reman	4	4	12 141-00	7 000000		4. 100
flows at 10%	7,395	2,011	4,951	3,060	3,599	21,016	12,207	33, 223
	*******			arrograms.		*********		
Discounted future net cash flows	\$ 7,852	\$ 2,254	\$ 8,573	\$ 3,686	\$ 2,633	5 24,998	\$ 6,965	\$ 31,963
As of December 31, 1999	**********	DARBURES-PRI	***********	***********	**********	THE STREET	**********	*********
Future cash inflows from sales								
of oil and gas	\$ 82,674					ADDA ADA		\$368,791
Puture production costs	21,219	\$ 29,360 6,618	\$ 64,192	\$ 34,771	\$ 63,027	\$274,024 65,583	\$ 94,767	98,589
Future development costs	4,131		13,660			20,051	3,104	23,155
Future income tax expenses	20.103	2,116	4,904	3,516	5,384			
tocate thecase cax expenses	20,103	8,096	23,396	7,680	22,898	82,173	26,573	108,746
Future net cash flows	\$ 37,221	\$ 12,530	\$ 22,232	5 13.821	\$ 20,413	\$106,217	\$ 32,084	\$138,301
Effect of discounting net cash	\$ 31.221	5 12,530	\$ 22,232	\$ 13,821	5 20,413	5106.217	\$ 32,004	\$136,301
flows at 10%	20,139	5,884	7.351	5,918	10,969	50,261	19,473	69,734
777	20,139	3,084	7,351	3,918	10,969	30,261	49,473	89,734
Discounted future net cash flows	\$ 17,082	\$ 5,646	\$ 14,881	\$ 7,903	\$ 9,444	\$ 55,956	\$ 12,611	\$ 68,567
	3200000000		*********				**********	******
-/TABLES								

</TABLE>

Change in Standardized Measure of Discounted Future Net Cash Flows Relating to Proved Oil and Gas Reserves

<TABLE>

Consolidated Subsidiaries	1999	1998	1997	
			*************	

	(mil2	lions of doll	ars)
<s></s>	<c></c>	«C>	<c></c>
Value of reserves added during the year due to extensions, discoveries, improved recovery and net purchases less related costs Changes in value of previous-year reserves due to:	\$ 4,245	\$ 1,329	\$ 2,976
Sales and transfers of oil and gas produced during the year, net of production (lifting) costs		(10,300)	(16,079)
Development costs incurred during the year	5,313	6,104	5,651
Net change in prices, lifting and development costs	59,466	(34,611)	(49, 176)
Revisions of previous reserves estimates	3,106	1,281	2,240
Accretion of discount	3,056	5,865	9,619
Net change in income taxes	(30,833)	15,989	20.837
feet)			
Total change in the standardized measure during the year	\$ 30,958	\$(14,343)	\$(23,732)

</TABLE>

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QUARTERLY INFORMATION

<TABLE>

<caption></caption>													
				1999						1998			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year	
	2.				******	******		*******	*******	*******	44444-44		
<s> Volumes</s>		«C»	<c></c>	<c></c>	<c></c>	<c></c>		<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	
Production of crude oil		356	40.044	E-Colo		housands o	£ ba			1 500	400	26.11	
and natural gas liquids		2,540	2,473	2,477	2,579	2,517		2,545	2,527	2,474	2,462	2,502	
Refinery throughput		6,068	5,950	5,899	5,991	5.977		6.147	6,133	6.083	6,010	6,093	
Petroleum product sales		8,974	9,842	8,879	8,857	8,887		8,728	8,775	8,918	9,066	8,873	
Natural gas production					(mi	llions of	cub:	ic feet de	ily)				
available for sale		11,516	9,178	8,700	11,851	10,308		11.908	9,757	9,333	11,489	10,617	
						thousands	of r	metric ton	s)				
Chemical prime product sales		5,876	6,063	5,088	6,458	24,485		5,905	5,952	5,840	5,931	23,628	
Summarized financial data													
Sales and other operating						(million	s of	f dollars)					
revenue	S	37,982	42.458	48,415	53,674	182,529	S	42,250	41,304	40,072	42,001	165.627	
Gross profit*	\$	17,850	19,229	20,379	22,950	80,408		19,221	19,460	18,704	20,076	77,461	
Net income as reported		1,484	1,954	2,188	2,284	7,910		2,595	2,262	1,909	1,378	8,144	
Cumulative effect of			-1,	-/	2,000	.,,	~	-1.555		21246	2,5.0		
accounting change	\$			5-	**		5	(70)		~-		(70)	
Net income as restated	\$	1,484	1,954	2,188	2,284	7,910	5	2,525	2,262	1,909	1,378	8,074	
Per share data													
Net income per common share						(dollar:	s pe	er share)					
as reported	\$	0.42	0.57	0.63	0.66	2.28	\$	0.74	0.65	0.55	0.39	2.33	
Cumulative effect of							- 9						
accounting change	5	~~	**		177	TT 1	. 5	(0.02)				(0.02)	
Net income per common share							-	1000					
as restated	\$	0.42	0.57	0.63	0.66	2.28	\$	0.72	0.65	0.55	0.39	2.31	
Net income per common share													

- assuming dilution Dividends per common share	\$ 0.42 \$ 0.4165	0.56	0.62	0.65	2.25 1.6870	\$ 0.71 5 0.4165	0.64 0.4165	0.54	0.39	2.28 1.6660
Common stock prices										
High	\$ 76.375	87.250	83.000	86.563	87.250	5 70.000	76.000	73:813	77.313	77.313
Low	\$ 64.313	69.438	72.125	70.063	64.313	\$ 56.625	65.375	62.000	69.438	56.625

Gross profit equals sales and other operating revenue less estimated costs associated with products sold.

The price range of ExxonMobil Common Stock is as reported on the composite tape of the several U.S. exchanges where ExxonMobil Common Stock is traded. The principal market where ExxonMobil Common Stock (XOM) is traded is the New York Stock Exchange, although the stock is traded on other exchanges in and outside the United States. Through December 1. 1999, the Common Stock traded under the name of Exxon Corporation (XOM).

There were 778,644 registered shareholders of ExxonMobil common stock at December 31, 1999. At January 31, 2000, the registered shareholders of ExxonMobil common stock numbered 772,614.

On January 26, 2000, the corporation declared a \$0.44 dividend per common share, payable March 10, 2000.

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### OPERATING SUMMARY

	1999	1998	1997
Production of crude oil and natural gas liquids Net production		ds of barre	is daily)
United States	729	745	803
Canada	325	322	297
Burope	650	635	641
Asia-Facific	307	322	347
Other Non-U.S.	516	478	449
1. Auto- 7.40 2.10.			
Worldwide	2,517	2.502	2,527
1.570.5		********	
Natural gas production available for sale	(millions o	of cubic fee	et daily)
Net production			
United States	2,871	3,140	3,223
Canada	683	667	600
Europe	4,438	4,245	4.283
Asia-Pacific	2,027	2,352	2,632
Other Non-U.S.	289	213	156
Worldwide	10,308	10,617	10.894
	********	*********	********
efinery throughput	Ithousand	s of barre	ls daily)
United States	1,930	1,919	2,026
Canada	441	445	448
Europe	1,782	1,898	1,899
Asia-Pacific	1,537	1,554	1,559
Other Non-U.S.	287	287	302
other new o.b.			
Worldwide	5,977	6,093	6,234
Westernam			
The first transport of the contract of the con			
etroleum product sales	0.000	Service.	21294
United States	2,918	2,804	2,777
Canada	587	2,804 579 2,646	574
Europe	2,597	2,646 2,266	2.002
Asia-Pacific and other Eastern Hemisphere	2,223 562	2,266	2,249
Latin America		2/6	564
nema in their			
Worldwide	8,887		8,773
	**********	**********	******
Gasoline, naphthas	3,428	3,417	3.317
Heating oils, kerosene, diesel oils	2,658	2,689	
Aviation fuels	813	774	753
Heavy fuels	706	765	744
Specialty petroleum products	1,282	1,228	1,234
Sportary protests produce	27.000		
Worldwide	8,887	8,873	8,773
The same and		*******	100000000000000000000000000000000000000
	Taken and	nds of metr	ric tona)
	(Lnousa	ned All man	
hemical prime product sales		23,628	23,838
hemical prime product sales	24.485		
hemical prime product sales	24,485	23,628	*******
chemical prime product sales	24.485 (milli	23,628 ons of metr	ric tons)
	24.485 (milli	23,628	ric tons)
	24.485 (milli 17	23,628 ons of metr	ric tons)
	24,485 (milli 17 (thousa	23,628 ons of metr	ric tons)  15 ric tons)  205

Operating statistics include 100 percent of operations of majority owned subsidiaries; for other companies, crude production, gas, petroleum product and chemical prime product sales include SexonMobil's ownership percentage, and refining throughput includes quantities processed for ExxonMobil. Net production

excludes royalties and quantities due others when produced, whether payment is made in kind or cash.

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EXHIBIT 21

Subsidiaries of the Registrant (1), (2) and (1)

AT DECEMBER 31, 1999

<TABLE>

	Percentage of Voting Securities Owned by Immediate Parent(s)	State or Country of Organization
<s></s>	«C>	<c></c>
Ancon Insurance Company, Inc.	100	Vermont
Esso Andina Inc.		Delaware
Esso Colombiana Limited		Delaware
Esso Australia Resources Ltd.	100	Delaware
Delhi Petroleum Pty, Ltd.	100	Australia
Esso Eastern Inc.		Delaware
Esso Exploration and Production Norway AS		Norway
Standard Marine Tonsberg AS	100	Norway
Esso Global Investments Ltd. (6)		Bahamas
Esso Holding Company Singapore Limited	100	Bahamas
Esso Singapore Private Limited		Singapore
Exxon Chemical Singapore Private Limited		Singapore
Singapore Aromatics Company Private (5)	50	Singapore
Esso Holding Company U.K. Inc.	100	Delaware
Esso Ireland Limited		Ireland
Esso UK plc.		England
Esso Exploration and Production UK Limited (7)	100	England
Esso Petroleum Company, Limited.		England
EssoAir International Limited	100	England
Exxon Chemical Limited	100	England
Exxon Chemical Olefins Inc	100	Delaware
Esso Hong Kong Limited	100	Hong Kong
Esso Malaysia Berhad	65	Malaysia
Esso Natuna Ltd	100	Bahamas
Esso Norge AS	100	Norway
Esso Production Malaysia Inc.	100	Delaware
Esso Sekiyu Kabushiki Kaisha	100	Japan
Esso Sociedad Anonima Petrolera Argentina (8)	277	Argentina
Esso Societe Anonyme Francaise	81.548	France
Esso (Switzerland)	100	Switzerland
Esso (Thailand) Public Company Limited	87.5	Thailand
Exxon Benelux Holdings B.V.	100	Netherlands
Esso Holding Company Holland Inc.	100	Delaware
Esso Holding B.V.	7.5	Netherlands/
asso notating biv	100	Delaware
ESSO N.V./S.A. (9)	100	Belgium/
		Delaware
Bsso Coordination Center N.V. (10)		Belgium
Exxon Chemical Antwerp Ethylene N.V. (11)		Belgium
Fina Antwerp Olefins N.V. (5)		Belgium
Esso Nederland B.V.		Netherlands
Exxon Chemical Holland Inc		Delaware
Exxon Chemical Holland B.V	100	Netherlands

1

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<TABLE>
<CAPTION>

Percentage of Voting Securities Owned by State or Country of Organization Immediate Parent (s) ESSO Eastern Inc. (continued)

EXON Benelux Holdings B.V. (continued)

EXON Funding B.V.

ESSO Capital B.V.

Nederlandse Aardolie Maastschappij B.V. (4) (5)

EXON Energy Limited.

Caste Peak Power Company Limited (5)

EXON Spain, S.L.

EXON Denmark Holdings International ApS.

ESSO International BVBA(12).

ESSO Central Europe Holding GmbH.

ESSO Austria GmbH (13)

ESSO Deutchland GmbH (14)

BRIGITTA Erdgas und Erdoel GmbH.

Hannover (4) (5)

Deutsche Exxon Chemical GmbH.

Mineraloelraffinerie Oberrhein GmbH & Co.

KG(5) <C> <C> <\$> Netherlands Netherlands 100 50 Netherlands Hong Kong Hong Kong 60 Spain Denmark Belgium 100 Germany Austria 100 50 100 Germany Germany 25 Germany

SALE STANDARD OF		244	
Exxon Luxembourg International, SARL		100	Luxembour
Exxon Chemical Netherlands 6 B.V.		100	Netherlan
Esso Brasileira de Petroleo Limitada		100	Brazil
Exxon Sao Paulo Holding LLC		100	Delaware
Exxon Yemen Inc		100	Delaware
General Sekiyu K.K. (15)		50.103	Japan
Tonen Kabushiki Kaisha (16)		50	Japan
Esso Exploration and Production Chad Inc.		100	Delaware
Esso Italiana S.p.A. (17)		100	Italy
Esso Standard (Inter-America) Inc.		100	Delaware Bahamas
Esso Standard Oil S.A. Limited		75.5	Delaware
Exxon Asset Management Company		100	New Jerse
Exxon Chemical Asset Management Partnership (18)		100	Delaware
Exxon Mobile Bay Limited Partnership (19)		100	Delaware
Paxon Polymer Company, L.P. II (20)		100	Delaware
Exxon Chemical Eastern Inc.		100	Delaware
Exxon Chemical HDPE Inc		100	Delaware
Exxon Chemical Interamerica Inc.		100	Delaware
Exxon (Barbados) Foreign Sales Corporation		100	Barbados Delaware
Exxon Coal U.S.A., Inc		100	France
Exxon France Holding SAS Societe Francaise EXXON CHEMICAL S.A		99.359	France
Exxon Chemical France		100	France
Exxon Chemical Polymeres SNC (21)		100	France
Exxon Holding Latin America Limited (22)		100	Bahamas
Esso Chile Petrolera Limitada (23)		100	Chile
Exxon Land Development, Inc.,		100	Delaware
Exxon Minerals International Inc.		100	Delaware
Compania Minera Disputada de Las Condes Limitada (24)		100	Chile

			2			
CAPTION>	Percentage of					
	Voting Securit					
	Owned by	State	or			
	Immediate	Countr				
	Parent(s)	Organiz				
S>						
exxon Overseas Corporation	100	Delawar				
Exxon Chemical Arabia Inc.	100	Delawar	7			
Al-Jubail Petrochemical Company (4) (5)	50	Saudi A				
Exxon Equity Holding Company	100	Delawar	e			
Exxon Overseas Investment Corporation	100	Delawar	e			
Esso Exploration Angola (Block 15) Limited	100	Bahanas				
Esso Exploration Angola (Block 17) Limited	100	Bahamas				
Exxon Financial Services Company Limited	100	Bahamas				
Exxon Ventures Inc.	100	Delawar				
Exxon Azerbaijan Limited	100	Bahamas				
Exxon Ventures Holdings Inc	100	Delawar	e			
(Block 33) Limited	100	Bahamas	6			
Mediterranean Standard Oil Co	100	Delawar				
Esso Trading Company of Abu Dhabi	100	Delawar				
exxon Pipeline Holdings, Inc.	100	Delawar	e			
Exxon Pipeline Company	100	Delawar	e			
excon Worldwide Trading Company	100	Delawar	e			
ExxonMobil Research and Engineering Company	100	Delawar	e			
mperial Oil Limited	69.6	Canada				
nternational Colombia Resources Corporation (25)	100	Delawar				
obil Corporation	100	Delawar				
Mobil Business Resources Corporation	100	Delawar				
Mobil Cerro Negro Holding, Ltd	100	Cayman				
Mobil Cerro Negro, Ltd.	100	Bahamas Delawar				
Mobil Equatorial Guinea Inc	100	Delawar				
Mobil Exploration & Producing U.S. Inc.	100	Delawar				
Mobil Exploration and Producing North America Inc.	100	Nevada				
Mobil Oil Exploration & Producing Southeast Inc	100	Delawar	e			
Mobil Oil Indonesia Inc.	100	Delawar	ė			
Mobil International Finance Corporation	100	Delawar	e			
Mobil Investments Inc.	100	Delawar	e			
Mobil International Petroleum Corporation	100	Delawar				
Mobil de Colombia S.A. (26)	98.1	Colombi				
General Petroleum Company, Inc.	100	New Yor				
Mobil Chemical International Ltd.	100	Delawar				
Mobil Exploration Norway Inc	100	Delawar				
Mobil Oil Company de Colombia.	100	Delawar				
Mobil Oil Cote d'Ivoire.	100	Ivory C				
Mobil Oil do Brasil (Industria e Comercio) Ltda, (27)	100	Brazil				
Mobil Oil East Africa Limited	100	Delawar	e			
Mobil Oil Egypt (S.A.E.) (28)	100	Egypt				
Mobil Oil Francaise	99.98	France				
Mobil Oil Malaysia Sendirian Berhad	100	Malaysi	ā			
Mobil Oil Singapore Pte. Ltd	100	Singapo	re			
Mobil Petroleum Company Inc.	100	Delawar				
Mobil Australia Finance Company Pty Ltd	100	Austral				
Mobil Europe Inc	100	Delawar	e			
3						
3						
Percentage of Voting Securities Owned by

	Immediate Parent(s)	Country of Organization
		*** -**********
<5> Mobil Corporation (continued)	«C»	<c></c>
Mobil International Petroleum Corporation (continued)		
Mobil Petroleum Company Inc. (continued)	100	Delaware
Mobil Exploration Indonesia Inc	100	Delaware Australia
Mobil Australia Resources Company Pty Limited	100	Australia
Mobil Holdings (Europe and Africa) Limited	100	Delaware Delaware
Mobil Oil Portuguesa, LDA (29)	100	Portugal
Mobil Holdings Limited	100	England
Mobil Oil Company Limited	100	England England
Mobil Services Company Limited	100	England
Mobil Trading and Supply Limited	100	England
Vacuum Oil Company Limited	100	England England
Mobil North Sea Limited	100	Delaware
Mobil Holdings Benelux Inc.	100	Delaware Netherlands
Mobil Oil B.A.	100	Spain
Mobil Oil Hellas A.E. (30)	100	Greece
Mobil Marine Transportation Limited	100	Canada Marshall Islands
Mobil Oil Australia Limited	100	Australia
Vacuum Oil Company Proprietary Limited	100	Australia
Mobil Refining Australia Pty LTD	100	Australia Austria
Mobil Oil GmbH (31)	100	Germany
Mobil Erdgas-Erdoel GmbH	100	Germany
Mobil Mineraloel GmbH	100 99.9	Germany Hong Kong
Mobil Oil Kazakhstan Inc	100	Delaware
Mobil Oil Maroc (32)	100	Morocco
Mobil Oil New Zealand Limited	100	New Zealand Delaware
Mobil Gil (Switzerland)	100	Switzerland
Mobil Oil Turk A.S	100	Turkey
Mobil Petrochemical Sales and Supply Corporation Mobil Producing Netherlands Inc.	100	Delaware Delaware
Mobil Saudi Arabia Inc	100	Delaware
Mobil Sekiyu Kabushiki Kaisha	100	Japan
Mobil Vietnam Inc. Mobil Yanbu Petrochemical Company Inc.	100	Delaware Delaware
Saudi Yanbu Petrochemical Co. (4)(5)	50	Saudi Arabia
Mobil Yanbu Refining Company Inc.	100	Delaware
Saudi Aramco Mobil Refinery Company Ltd. (4)(5) Mobil Petrochemicals International Limited	100	Saudi Arabia Delaware
Mobil Pipe Line Company	100	Delaware
<table></table>		
<caption></caption>	Inches and	
<caption></caption>	Percentage of	
<caption></caption>	Percentage of Voting Securities Owned by	State or
<caption></caption>	Voting Securities Owned by Immediate	Country of
<caption></caption>	Voting Securities Owned by Immediate Parent(s)	Country of Organization
<caption> <s></s></caption>	Voting Securities Owned by Immediate	Country of
<s> Mobil Corporation (continued)</s>	Voting Securities Owned by Immediate Parent(s)	Country of Organization
<s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued)</s>	Voting Securities Owned by Immediate Parent(s)	Country of Organization
<pre> <s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc</s></pre>	Voting Securities Owned by Immediate Parent(s) <c> 100 100</c>	Country of Organization <c> Delaware Delaware</c>
<pre> «S&gt; Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation.</pre>	Voting Securities Owned by Immediate Parent(s) <c> 100 100 100</c>	Country of Organization <c> Delaware Delaware Delaware</c>
<pre> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Petrochemical Holdings Co. Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Mobil Kazakhstan Ventures Inc. Mobil Mazakhstan Ventures Inc. Mobil Mazakhsta</pre>	Voting Securities Owned by Immediate Parent(s) <c> 100 100</c>	Country of Organization <c> Delaware Delaware</c>
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<pre> <s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. </s></pre>	Voting Securities Owned by Immediate Parent(s) <c>  100 100 100 100 25 100</c>	Country of Organization <c> Delaware Delaware Delaware Delaware Delaware</c>
Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5)	Voting Securities Owned by Immediate Parent(s) <c> 100 100 100 100 100 100 40 99.98</c>	Country of Organization <c> Delaware Delaware Delaware Delaware Karakhstan Delaware Cameroon</c>
<pre> <s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc.     Mobil Petrochemical Holdings Co. Inc.     Mobil Sales and Supply Corporation.     Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc.     Tengizchevroil (5) Mobil Natural Gas Inc.     Duke Energy and Marketing LLC (5) Mobil Oil Comproun. Mobil Oil Corporation. </s></pre>	Voting Securities Owned by Immediate Parent(s) <c>  100 100 100 100 100 100 40 99.98 100</c>	Country of Organization <c> Delaware Delaware Delaware Delaware Delaware Karakhistan Delaware Delaware Cameroon New York</c>
Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5)	Voting Securities Owned by Immediate Parent(s) <c> 100 100 100 100 100 100 40 99.98</c>	Country of Organization <c> Delaware Delaware Delaware Delaware Karakhstan Delaware Cameroon</c>
Mobil Corporation (continued)  Mobil International Petroleum Corporation (continued)  Mobil Plastics Europe, Inc.  Mobil Petrochemical Holdings Co. Inc.  Mobil Sales and Supply Corporation  Mobil Gas Liquids Trading, Inc.  Mobil Kazakhstan Ventures Inc.  Tengizchevroil (5)  Mobil Natural Gas Inc.  Duke Energy and Marketing LLC (5)  Mobil Oil Cameroun  Mobil Oil Corporation  Mobil Alaska Pipeline Company.  Mobil California Exploration & Producing Asset  Company (33)	Voting Securities Owned by Immediate Parent(s)	Country of Organization <c> Delaware Delaware Delaware Delaware Karakhistan Delaware Delaware Delaware Delaware Delaware Delaware Delaware Delaware Delaware</c>
Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Pastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5) Mobil Oil Cameroun Mobil Oil Cameroun Mobil Oil Carporation Mobil California Exploration & Producing Asset Company (33). Aera Energy L.L.C. (5)	Voting Securities Owned by Immediate Parent(s) <c>  100 100 100 100 25 100 40 99.98 100 100 100 100 100 48.2</c>	Country of Organization <c> Delaware Delaware Delaware Delaware Kazakhstan Delaware Cameroon New York Delaware Delaware Delaware Catifornia</c>
<pre> <s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5) Mobil Oil Cameroun Mobil Oil Cameroun Mobil Alaska Pipeline Company. Mobil California Exploration &amp; Producing Asset Company (33)</s></pre>	Voting Securities Owned by Immediate Parent(s)	Country of Organization <c> Delaware Delaware Delaware Delaware Karakhistan Delaware Delaware Delaware Delaware Delaware Delaware Delaware Delaware Delaware</c>
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<pre> <s> Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5) Mobil Oil Comeroum. Mobil Oil Comporation Mobil Alaska Pipeline Company. Mobil California Exploration &amp; Producing Asset Company (33). Aera Energy L.L.C. (5) Mobil Chemical Company Inc. Mobil Development Nigeria Unicmited (34) Mobil Exploration and Producing Services Inc.  Mobil Exploration and Producing Services Inc. Mobil Exploration and Producing Services Inc.  Mobil Producing Mobil Producing Services Inc.  Mobil Exploration and Producing Services Inc.  Mobil Producing Mobil Producing Mobil Producing Services Inc.  Mobil Producing Mobil Pro</s></pre>	Voting Securities Owned by Immediate Parent(s)	Country of Organization <c> Delaware Delaware Delaware Delaware Karakhistan Delaware Delaware Cameroon New York Delaware Delaware</c>
Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5) Mobil Oil Cameroun. Mobil Oil Cameroun. Mobil Oil Caporation Mobil Oil Alaska Pipeline Company. Mobil California Exploration & Producing Asset Company (33) Aera Energy L.L.C. (5) Mobil Chemical Company Inc. Mobil Development Nigeria Inc. Mobil Development Nigeria Unlimited (34)	Voting Securities Owned by Immediate Parent(s) <c>  100 100 100 100 25 100 40 99.98 100 100 100 48.2 100 100 100 100 100 100 100 100 100 10</c>	Country of Organization  CO- Delaware Delaware Delaware Delaware Kazakhstan Delaware Cameroon New York Delaware California Delaware California Delaware Delaware Delaware California Delaware Delaware Delaware Delaware Delaware Delaware Nigeria
Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5) Mobil Matural Gas Inc. Duke Energy and Marketing LLC (5) Mobil Oil Comeroun. Mobil Oil Comporation Mobil Oil Corporation Mobil Alaska Pipeline Company. Mobil California Exploration & Producing Asset Company (33). Aera Energy L. L. C. (5) Mobil Chemical Company Inc. Mobil Development Nigeria Inc. Mobil Exploration and Producing Services Inc. Mobil Exploration Nigeria Inc. Mobil Exploration Nigeria Inc. Mobil Credit Corporation. Mobil Oil Credit Corporation. Mobil Oil Nigeria Public Limited Company	Voting Securities Owned by Immediate Parent(s)	Country of Organization <c> Delaware Delaware Delaware Delaware Delaware Karakhistan Delaware Delaware</c>
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Mobil Corporation (continued) Mobil International Petroleum Corporation (continued) Mobil Plastics Europe, Inc. Mobil Petrochemical Holdings Co. Inc. Mobil Sales and Supply Corporation. Mobil Gas Liquids Trading, Inc. Mobil Kazakhstan Ventures Inc. Tengizchevroil (5). Mobil Natural Gas Inc. Duke Energy and Marketing LLC (5). Mobil Oil Cameroun. Mobil Oil Cameroun. Mobil Oil Corporation. Mobil Alaska Fipeline Company. Mobil California Exploration & Producing Asset Company (33). Aera Energy L.L.C. (5). Mobil Chemical Company Inc. Mobil Development Nigeria Inc. Mobil Development Nigeria Inc. Mobil Exploration and Producing Services Inc. Mobil Oil Credit Corporation. Mobil Oil Credit Corporation. Mobil Oil Refining Corporation. Mobil Oil Nigeria Public Limited Company. Mobil Oil Refining Corporation. Mobil Rocky Mountain Inc. Mobil Troducing Texas & New Mexico Inc. Mobil Producing Texas & New Mexico Inc. Mobil Producing Texas & New Mexico Inc. Mobil QM Gas Inc. Qatar Liquefied Gas Company Limited (5) Mobil QM Gas Inc. Ras Laffan Liquefied Natural Gas Company Ltd. (5) The Superior Oil Company.	Voting Securities Owned by Immediate Parent(s)	Country of Organization  CC>  Delaware Delaware Delaware Delaware Delaware Marakhistan Delaware

### NOTES .

- (1) For the purposes of this list, if the registrant owns directly or indirectly approximately 50 percent of the voting securities of any person and approximately 50 percent of the voting securities of any person is owned directly or indirectly by another interest, or if the registrant includes its share of net income of any other unconsolidated person in consolidated net income, such person is deemed to be a subsidiary.
- with respect to certain companies, shares in names of nominees and qualifying shares in names of directors are included in the above 127
- percentages.
  The names of other subsidiaries have been omitted from the above list since considered in the aggregate, they would not constitute a significant subsidiary.

#### < PAGES

- The registrant owns directly or indirectly approximately 50 percent of the securities of this person and approximately 50 percent of the voting securities of this person is owned directly or indirectly by another single interest
- The investment in this unconsolidated person is represented by the (5) registrant's percentage interest in the underlying
- Dual ownership; of the 100%, 83.3333% is owned by Esso Eastern Inc. and 16.6667% is owned by Exxon Chemical Eastern Inc. (6)
- (7)
- Dual ownership; of the 100%, 98% is owned by Esso UK plc and 2% is owned by Esso Bolding Company U.K. Inc.
  Multiple ownership; of the 100%, 97% is owned by Esso Eastern Inc.,
  2.75% is owned by Exxon Chemical Interamerica Inc. and .25% is owned by (8) Exxon Mobil Corporation
- Dual ownership, of the 100%, 99,99997% is owned by Esso Holding B.V. and 0.00003% is owned by Exxon Chemical Holland Inc.
- Multiple ownership; of the 100*, 32.22* is owned by Esso N.V./S.A.. 26.39* is owned by Esso Standard NV, 28.06* is owned by Esso Exploration and Production Norway AS and 13.33* is owned by Exxon Chemical Antwerp Ethylene NV.
- (11)
- Dual ownership; of the 100%, 99.999% is owned by Esso Holding B.V. and 0.0006% is owned by Exxon Chemical Holland Inc.
  Dual ownership; of the 100%, 99.9% is owned by Exxon Denmark Holdings
  International ApS and 0.1% is owned by Exxon Luxembourg International, (12) SARL
- Dual ownership, of the 100%, 99.9996% is owned by ESSO Central Europe Holding GmbH and 0.0004% is owned by Excon Mobil Corporation. Dual ownership, of the 100%, 99.998% is owned by ESSO Central Europe Holding GmbH and 0.002% is owned by Excon Mobil Corporation. (14)
- (15)
- (16)
- Bolding Gmba and 0.0024 is owned by Exxon Mobil Corporation.

  Dual ownership, of the 50.103%, 48.57% is owned by Esso Eastern Inc.

  and 1.532% is owned by Esso Sekiyu Kabushiki Kaisha.

  Dual ownership; of the 50%, 25% is owned by Esso Eastern Inc. and 25% is owned by Mobil Petroleum Company Inc.

  Dual ownership; of the 100%, 90% is owned by Exxon Mobil Corporation and 10% is owned by Exxon Overseas Corporation. (17)
- (18)
- Dual ownership; of the 100*, 68.4* is owned by Exxon Mobil Corporation and 31.6* is owned by Exxon Asset Management Company.
- Dual ownership, of the 100%, 81.4% is owned by Exxon Chemical Asset.
  Management Partnership and 18.6% is owned by Exxon Mobil Corporation.
  Dual ownership; of the 100%, 98% is owned by Exxon Mobile Bay Limited (19)
- (20) Dual ownership; of the 100%, 98% is owned by Exxon Mobile Bay Limited Partnership and 2% is owned by Exxon Chemical HDPE Inc.

  Dual ownership; of the 100%, 98% is owned by Societe Francaise EXXON CHEMICAL S.A. and 2% is owned by Exxon Chemical France.

  Dual ownership; of the 100%, 79,822% is owned by Exxon Mobil Corporation and 20.178% is owned by Esso Standard (Inter-America) Inc.

  Dual ownership; of the 100%, 99% is owned by Exxon Holding Latin America
- (21)
- (22)
- 1231
- Dual ownership; of the 100%, 99% is owned by Exxon Rolling data America Limited and 1% is owned by Exxon Mobil Corporation.

  Multiple ownership, of the 100%, 47.56% is owned by Exxon Minerals International Inc., 34.18% is owned by Exxon Financial Services Company Limited and 18.26% is owned by Exxon Holding Latin America Limited.

  Dual ownership, of the 100%, 55% is owned by Exxon Mobil Corporation and 45% is owned by Esso Holding Company Holland Inc. (25)

# <PAGE>

- Multiple ownership; of the 98.1%, 81.27% is owned by Mobil International (26)
- (27)
- Multiple ownership; of the 98.1*, 81.27* is owned by Mobil International Petroleum Corporation, .31* is owned by Mobil Oll Company de Colombia and 16.52* is owned by Mobil Petroleum Company Inc.
  Dual ownership; of the 100*, 90* is owned by Mobil International Petroleum Corporation and 10* is owned by General Petroleum Company Inc.
  Multiple ownership; of the 100*, 99.28* is owned by Mobil International Petroleum Corporation, .36* is owned by General Petroleum Company, Inc.
  and .36* is owned by Mobil Petroleum Company, Inc.
  Dual ownership; of the 100*, 99.98* is owned by Mobil Holdings (Europe and Africa) Limited and .02* is owned by Mobil Services Company Limited.
  Dual ownership; of the 100*, 99.98* is owned by Mobil Holdings Benelux Inc. and .02* is owned by Mobil Mobil Services Company Limited.
  Dual ownership; of the 100*, 90* is owned by Mobil Petroleum Company Inc. and 10* is owned by Mobil International Petroleum Company Dual ownership; of the 100*, 80* is owned by Mobil Petroleum Company Dual ownership; of the 100*, 87.55* is owned by Mobil Petroleum Company (28)

- (31)
- (32)
- Dual ownership: of the 100%, 87.55% is owned by Mobil Petroleum Company Inc. and 12.45% is owned by Mobil Oil Française. Dual ownership: of the 100%, 98.5% is owned by Mobil Oil Corporation and 1.5% is owned by Mobil Exploration and Producing North America Inc. (33)
- Dual ownership; of the 100%, 50% is owned by Mobil Development Nigeria Inc. and 50% is owned by Mobil Exploration Nigeria Inc. (34)
- Dual ownership; of the 100%, 65.31% is owned by Mobil Rocky Mountain Inc. and 34.69% is owned by Mobil Exploration and Producing North (35) America Inc.

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                                                                                                                                    EXHIBIT 23.1
                                             CONSENT OF INDEPENDENT ACCOUNTANTS
   We hereby consent to the incorporation by reference in the following Prospectuses constituting part of the Registration Statements on:
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         Form S-3 (Nos. 333-27489 -- Exxon Mobil Corporation Shareholder Investment Program;
                   and 33-60677)
        Form S-3 (No. 33-48919)
                                                           -- Guaranteed Debt Securities and Warrants to Purchase
                                                            Guaranteed Debt Securities of Roxon Capital Corporation;
--Guaranteed Debt Securities of SeaRiver Maritime
        Form S-3 (No. 33-8922)
                                                            Financial Holdings, Inc. (formerly Exxon Shipping
                                                            Company)
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  and we hereby consent to the incorporation by reference in the Registration
   -TARLES
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        Form S-8 (Nos. 333-36917
and 33-51107)
                                                        --1993 Incentive Program of Exxon Mobil Corporation
(together with 1988 Long Term Incentive Plan of Exxon
                                                          Mobil Corporation);
--ExxonMobil Savings Plan
        Form S-8 (No. 333-72955) --- ExxonNobil Savings Plan
Form S-8 (No. 333-75659) -- Post-Effective Amendment No. 1 on Form S-8 to Form S-4
 of our report dated February 23, 2000 appearing on page F13 of the accompanying financial section of the 1999 Annual Report to shareholders of Exxon Mobil Corporation which is incorporated as Exhibit 13 in this Annual Report on Form 10-K.
  /s/ PRICEWATERHOUSECOOPERS LLP
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March 23, 2000
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                                                                                                                                   PENTETT 23.2
 Consent of Ernst & Young LLP, Independent Auditors
We consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-27489 and 33-60677) pertaining to the Exxon Mobil Corporation Shareholder Investment Program; Form S-3 (No. 33-48919) pertaining to Guaranteed Debt Securities and Warrants to Purchase Guaranteed Debt
 Securities of Exxon Capital Corporation; Form S-3 (No. 33-8922) pertaining to Guaranteed Debt Securities of SeaRiver Maritime Financial Holdings, Inc.
Guaranteed Debt Securities of SeaRiver Maritime Financial Holdings, Inc. (formerly Exxon Shipping Company); Form S-8 (Nos. 333-38917 and 33-51107) pertaining to the 1993 Incentive Program of Exxon Mobil Corporation and the 1998 Long Term Incentive Plan of Exxon Mobil Corporation; Form S-8 (No. 333-72955) pertaining to the ExxonMobil Savings Plan; Form S-8 (No. 333-75659) pertaining to the Post-Effective Amendment No. 1 on Form S-8 to Form S-4; and in the related Prospectuses of our report dated February 26, 1999, with respect to the consolidated financial statements and schedule of Mobil
 Corporation included in this Annual Report on Form 10-K of Exxon Mobil
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                                                                                  /s/ ERNST & YOUNG LLP
McLean, Virginia
March 23, 2000
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THE SCHEDULE CONTAINS SUMMENT INMACIAL INFORMATION EXTRACTED FROM ADMINISTRACTOR OF THE YEAR ENDED 12/31/99 AND EXXONMOBIL'S CONSOLIDATED STATEMENT OF INCOME FOR THE YEAR ENDED 12/31/99, THAT ARE CONTAINED IN EXXORMOBIL'S FORM 10-K FOR THE ANNUAL PERIOD ENDED 12/31/99. THE SCHEDULE IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO SUCH FINANCIAL STATEMENTS.
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Exhibit 99

Report of Ernst & Young LLP Independent Auditors

Board of Directors and Shareholders Mobil Corporation

We have audited the consolidated balance sheets of Mobil Corporation as of December 31, 1998, and the related consolidated statements of income, changes in shareholders' equity, and cash flows for each of the two years in the period ended December 31, 1998 (not presented separately herein). Our audits also included the financial statement schedule listed in the Index at Item 14 (not presented separately herein). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Mobil Corporation at December 31, 1998; and the consolidated results of its operations and its cash flows for each of the two years in the period ended December 31, 1998, in conformity with accounting principles generally accepted in the United States. Also, in our opinion, the related financial statement schedule, when considered in relation to the basis financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

/s/ ERNST & YOUNG LLP

McLean, Virginia February 26, 1999

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As filed with the Securities and Exchange Commission on April 5, 1999 Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549 

> FORM S-4 REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

EXXON CORPORATION (Exact name of Registrant as specified in its charter)

*****************

New Jersey (State or Other Jurisdiction of Incorporation or Organization)

2911 (Primary Standard Industrial Classification Code Number)

13-5409005 (I.R.S. Employer Identification Number)

5959 Las Colinas Boulevard

Irving, Texas 75039-2298

(972) 444-1000

(Address, Including Zip Code, and Telephone Number, including Area Code, of Registrant's Principal Executive Offices)

Charles W. Matthews Exxon Corporation 5959 Las Colinas Boulevard Irving, Texas 75039-2298

BBF000068

(972) 444-1000 (Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

copies to:

<TABLE>

George R. Bason, Jr.
Davis Polk & Wardwell
450 Lexington Avenue
New York, New York 10017
(212) 450-4000
</TABLE>

Samuel H. Gillespie III
 Mobil Corporation
 3225 Gallows Road
Fairfax, Virginia 22037-0001
 (703) 846-3000

<C>

Roger S. Aaron Skadden, Arps, Slate, Meagher & Flow LLP 919 Third Avenue New York, NY 10022 (212) 735-3000

Approximate Date of Commencement of Proposed Sale to the Public: As soon as practicable after the effectiveness of this Registration Statement and the effective time of the merger of a wholly-owned subsidiary of the Registrant with and into Mobil Corporation as described in the Agreement and Plan of Merger dated as of December 1, 1998.

If the securities being registered on this form are being offered in connection with the formation of a holding company and there is compliance with General Instruction G, check the following box. []

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

<PAGE>

#### CALCULATION OF REGISTRATION FEE

<TABLE:

Title of each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Unit	Proposed Maximum Aggregate Offering Price (2)	Amount of Registration Fee(3)
* *****************	**********		************	**********
cS>	<c></c>	<c></c>	<c></c>	<c></c>
Common Stock, without par value	(1)	N/A	\$72,757,343,750	\$20,226,541.56

- (1) The maximum number of shares of Exxon common stock issuable in connection with the merger in exchange for shares of Mobil common stock, based on (i) the maximum number of shares of Mobil common stock exchangeable in the merger (833,000,000 shares) and (ii) the exchange ratio applicable in the merger (1.32015 shares of Exxon common stock for each share of Mobil common stock).
- (2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(f)(1) and Rule 457(c) of the Securities Act, based on the market value of the Mobil shares to be received by Exxon in the merger, as established by the average of the high and low sales prices of Mobil common stock on April 1, 1999 on the consolidated tape, which was \$87.34375.
- (3) This fee has been calculated pursuant to Section 6(b) of the Securities Act, as .0278 of one percent of \$72,757,343,750. In accordance with Rule 457 under the Securities Act, the fee of \$14,003,550 paid by the Registrant and Mobil pursuant to Rule 14a-6(i) (1) under the Securities Exchange Act upon the filing of their preliminary proxy material relating to the merger has been credited against the registration fee payable in connection with this filing. The balance of the fee payable with this filing is therefore \$6,222,991.56.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

<PAGE>

#### CROSS REFERENCE SHEET

<TABLE> LOCATION IN JOINT PROXY ITEM NUMBER STATEMENT/PROSPECTUS IN FORM S-4 INFORMATION ABOUT THE TRANSACTION <85 <C> Forepart of Registration Statement Pacing Page of the Registration Statement; Outside Front and Outside Front Cover Page of Prospectus..... Cover Page of Joint Proxy Statement/Prospectus Inside Front and Outside Back Cover Pages Where You Can Find More Information; Table of Contents; of Prospectus..... Comparative Per Share Data; Where You Can Find More Information Risk Factors, Ratio of Earnings to Fixed Charges and Other Information..... Outside Front Cover Page of Prospectus; Summary; Interests of Certain Persons in the Merger; Selected Historical Financial Data; Selected Historical and Pro Forma Financial Data; The Merger Transaction; Comparative Per Share Market Price and Dividend Information; Chapter Two - Information About the Meetings and Voting Terms of the Transaction..... Outside Front Cover Page of Prospectus; Summary; The Merger Transaction; Opinions of Financial Advisors; The Merger Agreement; Chapter Two - Information About the Meetings and Voting; Chapter Three - Certain Legal Information. Pro Forma Financial Information..... Unaudited Pro Forma Condensed Combined Financial Statements; Notes to Unaudited Pro Forma Condensed Combined Pinancial Statements. Material Contacts with the Company Being Summary; The Merger Transaction; The Merger Acquired..... Agreement. Additional Information Required for Reoffering by Persons and Parties Deemed to be Underwriters..... Interests of Named Experts and Counsel...... Disclosure of Commission Position on Indemnification for Securities Act Liabilities...... < PAGE> INFORMATION ABOUT THE REGISTRANT 10. Information with Respect to S-3 Registrants..... 11. Incorporation of Certain Information by Where You Can Find More Information Reference..... 12. Information with Respect to S-2 and S-3 Summary; The Merger Transaction; Where You Can Find Registrants More Information Incorporation of Certain Information by Information with Respect to Registrants Other Than S-3 or S-2 Registrants..... 14. C. INFORMATION ABOUT THE COMPANY BEING ACQUIRED 15. Information with Respect to S-3 Companies..... 16. Information with Respect to S-2 or S-3 Summary; The Merger Transaction; Where You Can Find Companies..... More Information 17. Information with Respect to Companies Other Than S-2 or S-3 Companies..... VOTING AND MANAGEMENT INFORMATION

Outside Front Cover Page of Joint Proxy

Statement/Prospectus; Summary; Interests of Certain

18. Information if Proxies, Consents or

Authorizations are to be Solicited.......

Persons in the Merger; The Merger Agreement; The Stock Option Agreement; Chapter Two - Information About the Meetings and Voting; Chapter Three - Certain Legal Information; Where You Can Find More Information

19. Information if Proxies, Consents or
 Authorizations are not to be Solicited
 or in an Exchange Offer................

Omitted because the Item is inapplicable or the answer is negative.

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[PRELIMINARY DRAFT DATED APRIL 5, 1999, SUBJECT TO COMPLETION]

EXXON logo

Mobil logo

MERGER PROPOSED -- YOUR VOTE IS VERY IMPORTANT

The Boards of Directors of Exxon Corporation and Mobil Corporation have approved a merger agreement which provides for the combination of the two companies. We believe the combined company will be able to create substantially more shareholder value than could be achieved by the companies individually.

Our combined company would be named Exxon Mobil Corporation, with its headquarters in Irving, Texas. Sometimes in this booklet we will refer to the combined company as "Exxon Mobil".

If the merger is completed, holders of Mobil common stock will receive, for each Mobil share, 1,32015 shares of Exxon Mobil common stock, and each share of Mobil ESOP preferred stock will be converted into an equivalent share of a newly created class of Exxon Mobil preferred stock. Exxon shareholders will continue to own their existing shares after the merger. Sometimes in this booklet we refer to Exxon stock after the closing of the merger as "Exxon Mobil stock".

Exxon Mobil will issue approximately 1.03 billion shares of Exxon Mobil common stock to Mobil shareholders in the merger, based on outstanding shares on March 1, 1999. These shares will represent approximately 30% of the outstanding Exxon Mobil common stock after the merger. Exxon shareholders before the merger will represent approximately 70% of the outstanding Exxon Mobil shares after the merger.

We are asking shareholders of Exxon to approve the merger and related matters and to vote on the election of Exxon directors and other Exxon annual meeting matters described in this booklet.

We are asking shareholders of Mobil to approve the merger agreement and the merger and to vote on the election of Mobil directors and other Mobil annual meeting matters described in this booklet. If the merger is completed, these Mobil annual meeting matters will, as a result, be superseded.

We cannot complete the merger unless shareholders of both companies approve it. Approval of the other annual meeting matters is not a condition of the merger.

The dates, times and places of the meetings are:

For Exxon shareholders:

Thursday, May 27, 1999 10:00 a.m., Central Time Trinity Conference Center Wyndham Anatole Hotel 2201 Stemmons Freeway Dallas. Texas

For Mobil shareholders:

Thursday, May 27, 1999 10:00 a.m., Central Time Regency Ballroom of the Fairmont Hotel 1717 North Akard Street Dallas, Texas

/s/ Lee R. Raymond

/s/ Lucio A. Noto

Lee R. Raymond Chairman of the Board Exxon Corporation Lucio A. Noto

Chairman of the Board and Chief Executive Officer Mobil Corporation

Neither the Securities and Exchange Commission nor any state securities regulators have approved the Exxon Mobil stock to be issued under this Joint Proxy Statement/Prospectus or determined if this Joint Proxy Statement/Prospectus is accurate or adequate. Any representation to the contrary is a criminal offense.

Joint Proxy Statement/Prospectus dated _____, 1999, and first mailed to shareholders on April 9, 1999.

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[Note: Page for Exxon Booklet only.]

EXXON logo

NOTICE OF ANNUAL MEETING OF SHAREHOLDERS OF EXXON CORPORATION

Time .

10:00 a.m., Central Time

Date:

May 27, 1999

Place:

Trinity Conference Center Wyndham Anatole Hotel 2201 Stemmons Freeway Dallas, Texas

Purpose:

- o Vote on the proposed merger of Exxon and Mobil and related matters
- o Elect directors
- o Ratify appointment of independent accountants
- o Vote on four shareholder proposals
- a Conduct other business if properly raised

Only shareholders of record on March 29, 1999 may vote at the meeting. Only shareholders or their proxy holders and Exxon guests may attend the meeting.

Your vote is important. Please complete, sign, date and return your proxy card in the enclosed envelope promptly, or authorize the individuals named on your proxy card to vote your shares by calling the toll-free telephone number or using the internet as described in the instructions included with your proxy card.

/s/ T.P. Townsend T.P. Townsend Secretary

April 9, 1999

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[Note: Page for Mobil Booklet only |

Mobil logo

NOTICE OF ANNUAL MEETING TO BE HELD ON MAY 27, 1999

To the Shareholders of Mobil Corporation:

The annual meeting of shareholders of Mobil Corporation will be held on Thursday, May 27, 1999, at 10:00 a.m., at the Regency Ballroom of the Fairmont Hotel, 1717 North Akard Street, Dallas, Texas, for the following purposes:

- To consider and vote upon a proposal to approve and adopt the Agreement and Plan of Merger, dated as of December 1, 1998, among Mobil, Exxon Corporation and a subsidiary of Exxon, and the merger, as described in the attached joint proxy statement/prospectus;
- 2. To elect four members to the Board of Directors of Mobil;
- To approve and ratify the appointment of Ernst & Young LLP as Mobil's independent auditors for 1999;
- 4. To vote upon two shareholder proposals; and
- To transact such other business as may properly come before the meeting or any adjournment or postponement.

Holders of record of Mobil common stock and of Mobil ESOP preferred stock at the close of business on March 29, 1999, will be entitled to vote at the Mobil meeting or any adjournment or postponement. A list of shareholders entitled to vote will be kept at Mobil Place at 3000 Pegasus Park Drive, Dallas, Texas 75247, for ten days before the meeting.

If you attend the meeting, you must register before entering. We will give priority seating to shareholders of record, beneficial owners who have evidence of ownership, or their authorized representatives, and guests of management. You may bring one guest.

Please do not send any certificates for your stock at this time.

/s/ Carole J. Yaley Carole J. Yaley Secretary

April 9, 1999

Your vote is important. Whether or not you plan to attend the Mobil meeting, please complete, date and return your proxy card in the enclosed envelope promptly or authorize the individuals named on your proxy card to vote your shares by calling the toll-free telephone number or using the internet by following the instructions included with your proxy card.

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#### CHAPTER ONE THE MERGER

# QUESTIONS AND ANSWERS ABOUT THE MERGER

- Q: When and where are the shareholder meetings?
- A: Each company's meeting will take place on May 27, 1999 in Dallas, Texas. The address of each meeting is on page II-1.
- Q: What do I need to do now?
- A: Just mail your signed proxy card in the enclosed return envelope or vote by telephone or the internet, as soon as possible, so that your shares may be represented at your meeting. In order to assure that your vote is obtained, please give your proxy as instructed on your proxy card even if you currently plan to attend a meeting in person. The Board of Directors of each of Exxon and Mobil recommends that its shareholders vote in favor of the merger.
- Q: What do I do if I want to change my vote?
- A: Just send in a later-dated, signed proxy card to your company's Secretary or vote again by telephone or the internet before your meeting. Or, you can attend your meeting in person and vote. You may also revoke your proxy by sending a notice of revocation to your company's Secretary at the address under "The Companies" on page I-2.
- Q: If my shares are held in "street name" by my broker, will my broker vote my shares for me?
- A: If you do not provide your broker with instructions on how to vote your "street name" shares, your broker will not be permitted to vote them on the merger. You should therefore be sure to provide your broker with instructions on how to vote your shares. Please check the voting form used by your broker to see

if it offers telephone or intermet voting.

If you are an Exxon shareholder and do not give voting instructions to your broker, you will not be counted as voting for purposes of the merger vote unless you appear in person at the Exxon meeting.

If you are a Mobil shareholder and do not give voting instructions to your broker, you will, in effect, be voting against the merger unless you appear in person at the Mobil meeting and vote in favor of the merger.

- Q: Should I send in my stock certificates now?
- A: No. If the merger is completed, we will send Mobil shareholders written instructions for exchanging their share certificates. Exxon shareholders will keep their existing certificates.
- Q: What happens to my future dividends?

A: We expect no changes in Exxon's or Mobil's dividend policies before the merger. We expect that Exxon Mobil will continue to pay quarterly dividends on Exxon Mobil common stock after the merger. The payment of dividends by Exxon Mobil in the future, however, will depend on business conditions, Exxon Mobil's financial condition and earnings, and other factors. To compare dividends paid by each of Exxon and Mobil, see page I-30.

- Q: When do you expect the merger to be completed?
- A: We are working towards completing the merger as quickly as possible. In addition to shareholder approvals, we must also obtain regulatory approvals. We hope to complete the merger by mid-year, 1999.
- O: Who do I call if I have questions about the meetings or the merger?
- A: Exxon shareholders may call 1-800-628-8536. Mobil shareholders may call 1-800-300-3610.

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Chapter One - The Merger

# SUMMARY

This summary highlights selected information from this joint proxy statement/prospectus and may not contain all of the information that is important to you. To understand the merger fully and for a more complete description of the legal terms of the merger, you should read this document and the documents we have referred you to carefully. See "Where You Can Find More Information" on page VI-1.

The Companies

Exxon Corporation 5959 Las Colinas Boulevard Irving, Texas 75039-2298 (972) 444-1000

Exxon's principal business is energy, involving exploration for, and production of, crude oil and natural gas, manufacturing of petroleum products and transportation and sale of crude oil, natural gas and petroleum products. Exxon is also a major manufacturer and marketer of petrochemicals, including olefins, aromatics, polyethylene and polypropylene plastics, and a wide array of specialty products. Exxon also engages in exploration for, and mining and sale of, coal, copper and other minerals, and has interests in electric power generation. Exxon affiliates support our businesses with extensive research programs.

Mobil Corporation 3225 Gallows Road Fairfax, Virginia 22307-0001 (703) 846-3000

Mobil's principal business involves crude oil, natural gas and petroleum products. Mobil is also a manufacturer and marketer of petrochemicals, packaging films and specialty chemical products. Mobil operates a worldwide oil and gas exploration and producing business, a global marketing and refining complex, a network of pipelines and tankers linking these worldwide oil and gas businesses, a worldwide chemical business and a sophisticated research and engineering operation.

Reasons for the Merger

We believe the combined Exxon Mobil can be run more efficiently and can use its capital more profitably than either company on its own. As a result, we believe the merger will create substantial long-term value for the shareholders of both companies. Of course, these benefits depend on our ability to obtain the necessary approvals for the merger, to integrate the businesses of Exxon and Mobil successfully after the merger, and on other uncertainties described on page I-12.

To review the reasons for the merger in greater detail, see pages I-19 through I-26.

Merger Recommendations to Shareholders

To Exxon Shareholders:

The Exxon Board believes that the merger is fair to you and in your best interest and recommends that you vote FOR the merger, including the related issuance of common stock and the related amendments to Exxon's charter described on page fII-10.

To Mobil Shareholders:

The Mobil Board believes that the merger is fair to you and in your best interest and recommends that you vote FOR the approval of the merger agreement and the merger.

The Merger

The merger agreement is attached as Annex A to this joint proxy statement/prospectus. We encourage you to read the merger agreement as it is the legal document that governs the merger.

What Mobil Shareholders Will Receive (see page I-54)

As a result of the merger, Mobil shareholders will receive, for each share of Mobil common stock, 1.32015 shares of Exxon Mobil common stock.

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Chapter One - The Merger

Exxon Mobil will not issue any fractional shares. Mobil shareholders will receive a check in the amount of the proceeds from the sale of their fractional shares in the market.

#### Example:

- o If you currently own 1,000 shares of Mobil common stock, then after the merger you will receive 1,320 shares of Exxon Mobil common stock and a check for the sale proceeds for .15 of one share of Exxon Mobil common stock, rounded to the nearest one cent. The value of the stock that you will receive will fluctuate as the price of Exxon Mobil common stock changes after the merger.
- o On April 1, 1999 the last per share price of Exxon common stock on the Consolidated Tape was \$70 1/8.

  Applying the 1.32015 exchange ratio to the Exxon last reported price on that date, each holder of Mobil common stock would be entitled to receive Exxon Mobil common stock with a market value of approximately \$92.58 for each share of Mobil common stock. However, the market prices for Mobil and Exxon common stock are likely to change between now and the merger. You are urged to obtain current price quotes for Mobil and Exxon common stock.

Comparative Per Share Market Price Information

Exxon and Mobil common stock are both listed on the New York Stock Exchange. On November 25, 1998, the last full trading day before Exxon and Mobil issued a joint release confirming that they were in discussions concerning a possible combination, Exxon common stock closed at \$72 11/16 and Mobil common stock closed at \$78 3/8. On November 30, 1998, the last full trading day prior to the public announcement of the proposed merger, Exxon closed at \$75 and Mobil closed at \$86. On April 1, 1999, Exxon closed at \$70 1/8 and Mobil closed at \$87 3/8.

Listing of Exxon Mobil Common Stock

The shares of Exxon Mobil common stock will be listed on the New York Stock Exchange under the ticker symbol "XOM".

Ownership of Exxon Mobil After the Merger

Exxon Mobil will issue approximately 1.03 billion shares of Exxon Mobil common stock to Mobil shareholders in the merger. The shares of Exxon Mobil common stock to be issued to Mobil shareholders in the merger will represent approximately 30% of the outstanding Exxon Mobil common stock after the merger.

This information is based on the number of Exxon and Mobil shares outstanding on March 1, 1999 and does not take into account stock options or other equity-based awards.

Shareholder Vote Required to Approve the Merger

For Exxon shareholders: Approval of the merger and related matters described on page I-14 requires a majority of the votes cast by holders of Exxon common stock and Exxon Class A preferred stock, voting as a single class.

For Mobil shareholders: Approval of the merger requires a majority of the total votes represented by the outstanding shares of Mobil common stock and Mobil ESOP preferred stock, voting as a single class.

Appraisal Rights (see page I-29)

The holders of Exxon and Mobil common stock do not have any right to an appraisal of the value of their shares in connection with the merger. We provide on page I-29 in the section captioned "The Merger Transaction--Appraisal Rights" information regarding the appraisal rights available in connection with the merger to the trustee of the Mobil ESOP, the sole record holder of Mobil ESOP preferred stock.

Board of Directors of Exxon Mobil and Related Matters After the Merger

Following the merger, the board of directors of Exxon Mobil will have 19 members, including the 13 current Exxon directors plus six directors designated by Mobil. These designees are named below (see page I-55). Mr. Lucio A. Noto, Chairman of Mobil, will become the Vice-Chairman of Exxon Mobil. In addition, one Mobil designee will be appointed to each of Exxon Mobil's Audit Committee and Compensation Committee. (see page I-55.)

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Chapter One - The Merger

Interest of Officers and Directors in the Merger

When you consider the Mobil Board's recommendation that Mobil shareholders vote in favor of the merger, you should be aware that a number of Mobil officers and directors may have interests in the merger that may be different from, or in addition to, yours (see page I-49).

Accounting Treatment

We expect the merger to qualify as a pooling of interests, which means that we will treat our companies as if they had always been combined for accounting and financial reporting purposes. As described on page I-26, we have each received letters from our independent accounting firms concurring with our conclusions that the merger should be accounted for as a pooling of interests.

Material Federal Income Tax Consequences of the Merger (see page I-27)

The merger has been structured as a "tax-free reorganization" for federal income tax purposes. Accordingly, holders of Mobil common stock or Mobil ESOP preferred stock generally will not recognize any gain or loss for federal income tax purposes on the exchange of their Mobil stock for Exxon Mobil stock in the merger, except for any gain or loss recognized in connection with the receipt of cash instead of a fractional share of Exxon Mobil common stock. The companies themselves, as well as holders of Exxon stock, will not recognize gain or loss as a result of the merger. It is a condition to the obligations of Mobil and Exxon to complete the merger that each receive a legal opinion from its outside counsel that the merger will be a tax-free reorganization for federal income tax purposes.

The federal income tax consequences described above may not apply to some holders of Mobil stock, including some types of holders specifically referred to on page I-27. Your tax consequences will depend upon your personal situation. You should consult your tax advisor for a full understanding of the tax consequences of the merger to you.

Conditions to the Completion of the Merger (see page I-58)

The completion of the merger depends upon meeting a number of conditions, including the following:

- o approval of the shareholders of Exxon and Mobil;
- o expiration or termination of the relevant waiting period under the Hart-Scott-Rodino Act:
- o approval by the European Commission of the merger;
- o absence of any law or court order prohibiting the merger;
- receipt of letters from the independent public accountants of 8xxon and Mobil reconfirming their concurrence that "pooling of interests" accounting treatment for the merger is appropriate;
- o receipt of opinions of Exxon's and Mobil's counsel that the merger will qualify as a tax-free reorganization;

- o absence of a material adverse effect on Exxon or Mobil during the period from December 1, 1998 until the closing of the merger; and
- c material accuracy as of closing of the representations and warranties made by the other party.

In addition, Exxon's obligation to complete the merger is subject to

- there being no proceeding seeking to limit Exxon's ownership of Mobil or to compel divestiture of assets, in either case to an extent that could reasonably be expected to result in a substantial detriment to Exxon and Mobil taken as a whole; and
- (2) all regulatory approvals for the merger being obtained on terms that are not reasonably likely to result in such a substantial detriment.

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Chapter One - The Merger

### Regulatory Approvals

Pursuant to the Hart-Scott-Rodino Act, the merger cannot be completed until after we have given certain information and materials to the Federal Trade Commission and a required waiting period has expired or been terminated. The companies submitted pre-merger notification and report forms during the week of December 14, 1995. On January 15, 1999, the FTC issued a request for additional information and other materials to Exxon and Mobil. The merger may not be completed until 20 days after both parties have substantially complied with this request or unless the waiting period is terminated earlier. The FTC has the authority to challenge the merger on antitrust grounds by seeking a federal court order enjoining the transaction pending an administrative hearing.

The merger is also subject to review under the competition laws of the European Union. We informally notified the European Commission of the merger on December 1. 1998, and expect to make the required formal pre-merger filing by the end of April 1999.

The merger may also be subject to regulatory review in jurisdictions other than the  $\sigma.s.$  and the EU.

Exxon and Mobil are working to obtain the required regulatory approvals and consents. However, we can give no assurance as to when or whether any of these approvals and consents will be obtained or the terms and conditions that may be imposed.

As described beginning on page I-58, Exxon and Mobil are not required to close unless the regulatory conditions to completion of the merger are satisfied.

Termination of the Merger Agreement (see page I-59)

Either Exxon or Mobil can terminate the merger agreement if any of the following occurs:

- (1) we do not complete the merger by December 1, 1999 -- however, that date becomes June 30, 2000 if the reason for not closing by December 1, 1999 is that the regulatory conditions specified in the merger agreement have not been satisfied by that date;
- (2) Exxon or Mobil shareholders do not give the required approvals;
- (3) a law or court order permanently prohibits the merger; or
- (4) the Mobil Board changes, in a manner adverse to Exxon, its recommendation of the merger. An adverse change would include the Mobil Board withdrawing or qualifying its recommendation or changing the recommendation to support another transaction. However, Mobil may not terminate for the reasons laid out in this paragraph (4) unless three conditions are met:
  - Mobil has received an offer that is superior to the merger with Exxon and intends to enter into an agreement with respect to the superior offer.
  - Exxon, within a specified time period, does not make an offer that is as favorable to Mobil's shareholders as the superior offer, and
  - Mobil has, prior to termination, paid to Exxon the termination fee described below.

In addition, Mobil can terminate the merger agreement if the Exxon Board changes its recommendation of the merger in a manner adverse to Mobil.

Neither Exxon nor Mobil can terminate the merger agreement for the reasons described in paragraph (1) above if it is in material breach of its obligations under the merger agreement.

Finally. Exxon and Mobil can mutually agree to terminate the merger agreement.

Termination Fees (see page I-60)

Mobil must pay Exxon a termination fee of \$1.5 billion in cash if:

 the merger agreement is terminated as described in paragraph (4) above, unless Exxon is in material breach of the merger agreement, or

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Chapter One - The Merger

- (2) the merger agreement is terminated in circumstances where
  - Mobil's shareholders do not vote in favor of the merger,
  - a third party has made a proposal for an alternative transaction, and
  - o within twelve months of the termination of the merger agreement Mobil enters into an agreement for an alternative transaction with that third party, or with another third party at a value per Mobil share higher than 595.96

Exxon must pay Mobil a termination fee of \$1.5 billion in cash if the merger agreement is terminated by Mobil because the Exxon Board changes, in a manner adverse to Mobil, its recommendation in favor of the merger, unless Mobil is in material breach of the merger agreement.

Stock Option Agreement

In connection with the merger agreement, Exxon and Mobil entered into a stock option agreement under which Mobil granted to Exxon an option to purchase approximately 14.9% of Mobil's outstanding common stock, at a price of \$95.96 per share which is adjustable in certain events. The option is exercisable under the same circumstances in which Mobil is required to pay to Exxon the \$1.5 billion termination fee referred to above. The stock option agreement is attached as Annex B. We encourage you to read this agreement.

Opinions of Financial Advisors (see pages I-39 and I-44)

In deciding to approve the merger, each Board considered the opinion of its financial advisor. Exxon received an opinion from J.P. Morgan Securities Inc. as to the fairness from a financial point of view of the consideration to be paid by Exxon in the merger as of December 1, 1998, and Mobil received an opinion from Goldman, Sachs & Co. as to the fairness from a financial point of view of the exchange ratio as of December 1, 1998. These opinions were reaffirmed as of April 2, 1999 and are attached as Annex C and Annex D. We encourage you to read these opinions.

Other Exxon Annual Meeting Matters

At the Exxon meeting, Exxon is also asking its shareholders to:

- o elect directors to the Exxon Board;
- o ratify the appointment of Exxon's independent accountants;
- o vote on four Exxon shareholder proposals; and
  - o conduct other business if properly presented.

Approval by Exxon shareholders of these other annual meeting proposals is not a condition to completion of the merger. Approval of the merger is not a condition to approval of these other annual meeting proposals.

The Exxon Board recommends that you vote FOR the election of directors and the ratification of the appointment of Exxon's independent accountants, and that you vote AGAINST the Exxon shareholder proposals.

Other Mobil Annual Meeting Matters

At the Mobil meeting, Mobil is also asking its shareholders to:

- o elect directors to the Mobil Board;
- o ratify the appointment of Mobil's independent auditors;
- o vote on two Mobil shareholder proposals; and
- o conduct other business if properly presented.

Approval by Mobil shareholders of these other annual meeting proposals is not a condition to completion of the merger. Approval of the merger is not a condition to approval of these other annual meeting proposals. If the merger is completed, these other annual meeting proposals will, as a result, be superseded.

The Mobil Board recommends that you vote FOR the election of directors and the ratification of the appointment of Mobil's independent auditors, and that you vote AGAINST the Mobil shareholder proposals.

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Chapter One - The Merger

SELECTED HISTORICAL AND PRO FORMA FINANCIAL DATA

How We Prepared the Financial Statements

We are providing the following information to aid you in your analysis of the financial aspects of the merger. We derived this information from the audited financial statements of Exxon for the years 1994 through 1998 and from the audited financial statements of Mobil for the years 1994 through 1998. The information is only a summary and you should read it together with our historical financial statements and related notes contained in the annual reports and other information that we have filed with the SEC and incorporated by reference. See "Where You Can Find More Information" on page VI-1.

Pooling of Interests Accounting Treatment

We expect that the merger will be accounted for as a "pooling of interests." This means that, for accounting and financial reporting purposes, we will treat our companies as if they had always been combined. For a more detailed description of pooling of interests accounting, see "The Merger Transaction--Accounting Treatment" on page I-26.

We have presented unaudited pro forma condensed combined financial information that reflects the pooling of interests method of accounting to give you a better picture of what our businesses might have looked like had they been combined since January 1, 1996. We prepared the pro forma condensed combined statements of income and pro forma condensed combined balance sheet by adding or combining the historical amounts of each company. The accounting policies of Exxon and Mobil are substantially comparable. Consequently, we did not make adjustments to the unaudited pro forma condensed combined financial statements to conform the accounting policies of the combining companies. The companies may have performed differently had they always been combined. You should not rely on the unaudited pro forma condensed combined financial information as being indicative of the historical results that we would have had or the future results that we will experience after the merger. See "Unaudited Pro Forma Condensed Combined Financial Statements" on page 1-32.

### Merger-Related Expenses

We estimate that merger-related fees and expenses, consisting primarily of SEC filing fees, fees and expenses of investment bankers, attorneys and accountants, and financial printing and other related charges, will be approximately \$90 million. See note 5 on pages I-37 and I-38.

Integration-Related Expenses

We estimate that costs of approximately \$2.0 billion will be incurred for severance and other integration-related expenses, including the elimination of duplicate facilities and excess capacity, operational realignment and related workforce reductions. These expenditures are necessary to reduce costs and operate efficiently. These costs will be charged to operations in the relevant period and therefore are not reflected in the unaudited pro forma condensed combined financial statements. See note 5 on pages I-37 and I-38.

Periods Covered

The unaudited pro forma condensed combined statements of income combine Exxon's results for the years 1998, 1997 and 1996 with Mobil's results for the years 1998, 1997 and 1996, giving effect to the merger as if it had occurred on January 1, 1996. The unaudited pro forma condensed combined balance sheet combines the balance sheets of Exxon and Mobil as of December 31, 1998, giving effect to the merger as if it had occurred on December 31, 1998.

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Chapter One - The Merger

SELECTED HISTORICAL FINANCIAL DATA

Selected Historical Financial Data of Exxon

The following selected historical financial data for each of the years ended December 31, 1994 through 1998 has been derived from Exxon's audited consolidated financial statements. This information is only a summary and you

should read it together with Exxon's historical financial statements and related notes contained in the annual reports and other information that we have filed with the SEC and incorporated by reference. See "Where You Can Find More Information" on page VI-1.

<TABLE>

	Years Ended December 31,							
	1998	1997	1996	1995	1994			
	******	/million of deller		have amounted				
<s></s>	eC>	(millions of dollar	s, except per s	<c></c>	<c></c>			
Sales and operating revenues	\$115,417	\$135,142	\$131,543	\$121,804	\$112,128			
Net income								
Before change in accounting		11.00						
principle	6.440	8.460	7,510	6,470	5,100			
Cumulative effect of	7.677		0.8.0177					
accounting change	(70)	0	0	.0	0			
	*******	******	******	*******	*******			
Net income	6,370	8,460	7,510	6,470	5,100			
Net income per common share								
Before change in accounting								
principle	2.64	3.41	3 - 01	2.59	2.04			
accounting change	(0.03)	0.00	0.00	0.00	0.00			
	*******		********	******	******			
Net income	2.61	3.41	3.01	2.59	2.04			
Net income per common								
Shareassuming dilution Before change in accounting								
principleCumulative effect of	2.61	3.37	2.99	2.58	2.03			
accounting change	(0.03)	0.00	0.00	0.00	0.00			
				*****	******			
Net income	2.58	3.37	2.99	2.58	2.03			
Cash dividends per common share	1.640	1.625	1.560	1:500	1.455			
Total assets	92,630	96,064	95,527	91,296	87,862			
Long-term debt	4,530	7,050	7,236	7,778	8,831			

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Chapter One - The Merger

# Selected Historical Pinancial Data of Mobil

The following selected historical financial data for each of the years ended December 31, 1994 through 1998 has been derived from Mobil's audited consolidated financial statements. This information is only a summary and you should read it together with Mobil's historical financial statements and related notes contained in the annual reports and other information that we have filed with the SEC and incorporated by reference. See "Where You Can Find More Information" on page VI-1.

<TABLE>

	Years Ended December 31,									
	1998			1997		1996		1995		1994
	****	/mi	1140	one of do	llar	s, except	per	share	amou	nte)
<9>	<c></c>	1	<0		<c< th=""><th></th><th><c></c></th><th>- Line</th><th>&lt;0</th><th></th></c<>		<c></c>	- Line	<0	
Sales and operating revenues(1)	\$	51,893	\$	64,028	\$	79,944	\$	73,047	. \$	66,423
Net income										
Before change in accounting principle		1,704		3,272		2,964		2,376		1,759 (680)
	***	******	***		425		****	17777	***	
Net income		1.704		3,272		2,964		2,376		1,079
Net income per common share										
Before change in accounting principle		2.12		4.10		3.69		2.93		2.14
Cumulative effect of accounting change		0.00		0.00		0.00		0.00		(0.86)
		******			400	******				******
Net income		2.12		4.10		3.69		2.93		1.28
Net income per common shareassuming dilution										
Before change in accounting principle		2.10		4.01		3.62		2.88		2.12
Cumulative effect of accounting change		0.00		0.00		0.00		0.00		(0.83)
				******	455				350	
Net income		2.10		4.01		3.62		2.88		1.29
Cash dividends per common share		2.280		2.120		1.963		1.813		1.700
Total assets		42,754		43,559		46,408	4	12,138		41,542
Long-term debt		3,719		3,670		4,450		4,629		4,714

(1) Certain revenues have been reclassified. See note 2 on page I-17.

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Chapter One - The Merger

Selected Unaudited Pro Forma Combined Financial Data

The following selected unsudited pro forma combined financial data has been derived from and should be read with the Unaudited Pro Forma Condensed Combined Financial Statements and related notes on page I-32 through page I-38. This information is based on the historical consolidated balance sheets and related historical consolidated statements of income of Exxon and Mobil giving effect to the merger using the pooling of interests method of accounting for business combinations. This information is for illustrative purposes only. The companies may have performed differently had they always been combined. You should not rely on the selected unaudited pro forma combined financial data as being indicative of the historical results that would have been achieved had the companies always been combined or the future results that the combined company will experience after the merger.

<TABLE>

Years Ended December 31. 1997 1996 1998 (millions of dollars, except per share amounts) <C> 164,640 195,155 \$ Sales and operating revenues..... \$ 207.888 Net income Before change in accounting principle..... 10,474 8,144 11,732 Cumulative effect of accounting change..... 0 0 10,474 11,732 Net income..... 8.074 Net income per common share 3.32 2.95 2.11 0.00 0.00 (0.02) 3.32 2.95 Net income per common share -- assuming dilution Before change in accounting principle..... 3.28 2.91 Cumulative effect of accounting change...... (0.02) 0.00 0.00 3.28 2.91 1.619 Cash dividends per common share...... 1.666 1.538 Total assets..... 139,544 Long-term debt..... 8.532 «/TABLE> I-10

Chapter One - The Merger

Comparative Per Share Data

Set forth below are the net income, cash dividends and book value per common share data separately for Exxon and Mobil on a historic basis, for Exxon mobil on a pro forma combined basis and on a pro forma combined basis per Mobil equivalent share. The exchange ratio for the business combination is 1.32015 shares of Exxon Mobil common stock for each share of Mobil common stock.

The Exxon Mobil pro forma data was derived by combining the historic consolidated financial information of Exxon and Mobil using the pooling of interests method of accounting for business combinations as described under "Unaudited Pro Forma Condensed Combined Financial Statements" beginning on page I-32.

The Mobil equivalent share pro forma information shows the effect of the merger from the perspective of an owner of Mobil common stock. The information was computed by multiplying the Exxon Mobil pro forma information by the exchange ratio of 1.32015.

You should read the information below together with our historical financial statements and related notes contained in the annual reports and other information that we have filed with the SEC and incorporated by reference. See "Where You Can Find More Information" on page VI-1, The unaudited pro forma

combined data below is for illustrative purposes only. The companies may have performed differently had they always been combined. You should not rely on this information as being indicative of the historical results that would have been achieved had the companies always been combined or the future results that the combined company will experience after the merger.

<TABLE>

*	Year	mber 31.			
	1998	1997	1996		
<\$>	«C»	<c></c>	<c></c>		
Exxon Historic per Common Share Data:	746				
Net income	5 2.61	\$ 3.41	\$ 3.01		
Net incomeassuming dilution	2.58	3.37	2.99		
Cash dividends	1.640	1.625	1.560		
Book value		44000			
Exxon Mobil Pro Forma Combined per Exxon Mobil Common Share Data:					
Net income	\$ 2.31	\$ 3.32	\$ 2.95		
Net incomeassuming dilution.	2,28	3,28	2.91		
Cash dividends	1.666	1.619	1,538		
Book value	17.91				
Mobil Historic per Common Share Data:					
Net income	\$ 2.12	\$ 4.10	\$ 3.69		
Net incomeassuming dilution	2.10	4.01	3.62		
Cash dividends	2.280	2,120	1.963		
Book value			-		
Exxon Mobil Pro Forma Combined per Mobil Equivalent Common Share Data:					
Net income	\$ 3.05	\$ 4.38	\$ 3.89		
Net incomeassuming dilution	3.01	4.33	3.84		
Cash dividends	2.199	2.137	2.030		
Book value,					

 23.64 |  |  |I-11

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### CAUTIONARY STATEMENT CONCERNING FORWARD-LOOKING STATEMENTS

We have made forward-looking statements in this document that are subject to risks and uncertainties. Forward-looking statements include the information in this document regarding:

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synergies
efficiencies
cost savings
revenue enhancements
capital productivity
returns on capital employed
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cc>
capital spending
oil and natural gas production
asset portfolios
oil and natural gas resource potential of Exxon
Mobil after the closing,
the timetable for closing the merger

The sections of this document which contain forward-looking statements include "Questions and Answers About the Merger," * "Summary," * "Selected Historical and Pro Forma Financial Data--Merger-Related Expenses," * "Selected Historical and Pro Forma Financial Data--Integration Related Expenses," * "The Merger Transaction--Background of the Merger," * "The Merger Transaction--Our Reasons for the Merger," * "Unaudited Pro Forma Condensed Combined Financial Statements" and * "Opinions of Financial Advisors". Our forward-looking statements are also identified by words Such as "believes," "expects," "anticipates," "intends," "estimates" or similar expressions.

For those statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

You should understand that the following important factors, in addition to those discussed elsewhere in this document and in the documents which are incorporated by reference, could affect the future results of Exxon and Mobil, and of Exxon Mobil after the closing, and could cause those results or other outcomes to differ materially from those expressed in our forward-looking statements:

<TABLE>

<S> Economic and Industry Conditions <C>
Political/Governmental Factors

- materially adverse changes in economic or industry conditions generally or in the markets served by our companies
- o political stability in relevant areas of the world o political developments and laws and regulations, such as forced divestiture of assets, restrictions on

 supply and demand for and pricing of crude oil, natural gas and petrochemicals

changes in demographics and consumer preferences

Project/Technology Advances

 oil, natural gas and petrochemical project advancement

o the development and use of new technology

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production, imports or exports, price controls, tax increases and retroactive tax claims, expropriation of property, cancellation of contract rights, and environmental regulations

Operating Factors

supply disruptions
 technical difficulties

o changes in operating conditions and costs

the competitiveness of alternative energy

sources or product substitutes

o weather

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Competitive Factors

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Transaction or Commercial Factors

- the outcome of negotiations with partners, governments, suppliers, customers or others
- o our ability to integrate the businesses of Exxon and o the actions of competitors Mobil successfully after the merger
- o the challenges inherent in diverting management's focus and resources from other strategic opportunities and from operational matters during the integration process
- o the process of, or conditions imposed in connection with, obtaining regulatory approvals for the merger </TABLE>

### YEAR 2000 ISSUE

Exxon and Mobil are each engaged in major company-wide efforts to address the year 2000 issue. This issue relates to the inability of some computer programs and computer chips embedded in operating equipment to properly recognize dates in and after the year 2000. This could result in system failures or miscalculations that could cause disruptions to various business activities and operations. The efforts to address this issue generally include:

- the identification and assessment from a year 2000 standpoint of all business-critical software systems and operating equipment and the remediation of those that are not year 2000 compliant;
- (2) the assessment of the year 2000 readiness of business-critical third parties such as suppliers, customers, joint venture companies and governments; and
- (3) the development of contingency plans for mitigating the impact of failures for year 2000 reasons of business-critical systems, operating equipment or relationships with third parties.

Exxon and Mobil expect to complete their efforts to address the year 2000 issue in advance of December 31, 1999, and each is planning to take steps to deal with possible year 2000 issues that may arise around that date. Each company's effort is designed to address the company's unique systems, embedded computer chips and third-party relationships, and each effort is well advanced. Accordingly, irrespective of when the merger is completed, each company's effort will continue as planned to completion. There will be no major integration of the companies' computer systems that would delay either company's year 2000 compliance efforts.

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THE MERGER TRANSACTION

General

Exxon's Board is using this joint proxy statement/prospectus to solicit proxies from the holders of Exxon common stock and Exxon Class A preferred stock for use at the Exxon meeting. Mobil's Board is also using this document to solicit proxies from the holders of Mobil common stock and Mobil ESOP preferred stock for use at the Mobil meeting.

Exxon Proposals

At the Exxon meeting, holders of Exxon common stock and Exxon Class A preferred stock will be asked to vote upon:

- (1) approval of the proposed merger pursuant to an Agreement and Plan of Merger dated as of December 1, 1998 among Exxon, Mobil and a wholly owned Exxon subsidiary, including the related issuance of Exxon Mobil common stock.
- (2) approval of the amendment of Exxon's certificate of incorporation to increase the number of authorized shares of Exxon common stock to 4.5 billion, to change Exxon's name to "Exxon Mobil Corporation" and to eliminate Exxon's Class B preferred stock, none of which is outstanding, and
- (3) certain other Exxon annual meeting proposals described under "Other Exxon Annual Meeting Proposals" in Chapter Four of this booklet.

The merger will not be completed and the Exxon charter amendments will not be effected unless each is approved by Exxon shareholders. We sometimes refer to (1) and (2) collectively as the "Exxon Merger Proposals".

Mobil Proposals

At the Mobil meeting, holders of Mobil common stock and Mobil ESOP preferred stock will be asked to vote upon:

- approval and adoption of the merger agreement and the merger, and
- (2) Certain other Mobil annual meeting proposals described under "Other Mobil Annual Meeting Proposals" in Chapter Pive of this booklet

Background of the Merger

The management of each of Exxon and Mobil continually review their company's respective positions in light of the changing competitive environment of the oil and gas industry with the objective of determining what alternatives are available to further enhance shareholder value. While both companies believe they have positive future prospects on a stand-alone basis, in recent years, the managements of both Exxon and Mobil have had conversations with a number of other companies regarding a range of options to improve their competitive positions, including acquisitions or dispositions of assets, possible pattnerships, alliances or other significant transactions.

On June 16, 1998, Mr. Lee R. Raymond, Exxon's Chairman and Chief Executive Officer, met with Mr. Lucio A. Noto, Mobil's Chairman and Chief Executive Officer, at Mobil's headquarters in Fairfax, Virginia. At the meeting, among other things, Mr. Raymond and Mr. Noto had preliminary discussions about the possibility of a combination of the two companies and touched on what each company could contribute to the combination in both

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the near- and longer-term, including areas where the companies' businesses are complementary or redundant, and on the possible allocation of management responsibilities and Board composition. They agreed that Mr. Raymond would serve as sole CEO of any combined entity that might result from the discussions. They agreed to further consider separately the possibility of such a transaction. On June 23, 1998, Mr. Noto telephoned Mr. Raymond to continue the discussions from their meeting the previous week. At the regular meeting of the Mobil Board on June 26, 1998, Mr. Noto informed the Mobil Board of his meeting with Mr. Raymond.

On July 1, 1998, Mr. Raymond and Mr. Charles W. Matthews, Exxon's general counsel, met with Mr. Noto and Mr. Samuel H. Gillespie III, senior vice president and general counsel of Mobil. at Exxon's headquarters in Irving, Texas to continue the preliminary discussions concerning the possibility of a transaction. The discussions focused on the need to identify, in the context of the near- and longer-term benefits, a mutually acceptable range for the possible relative ownerships by Exxon and Mobil shareholders of the combined company after the merger, before proceeding to discuss other transaction terms or to involve a significant number of other employees or outside advisors. Later that day, Mr. Noto notified the Mobil Board of the discussions between Mobil and Exxon. During the course of the month of July, Mr. Raymond and Mr. Noto had several further telephone conversations in which they continued to discuss their views on the benefits to shareholders of a possible combination transaction and an acceptable relative ownership range.

At the regular meeting of the Mobil Board on July 24, 1998, Mr. Noto briefed the Mobil Board on the preliminary discussions with Exxon regarding a possible combination transaction. Mr. Noto discussed with the Mobil Board recent developments in the oil industry and the potential benefits of a combination transaction between Exxon and Mobil. The Mobil Board indicated its support of initiatives to enhance shareholder value and authorized Mr. Noto to continue to pursue the possibility of a combination transaction between Mobil and Exxon.

At the regular meeting of the Exxon Board on July 29, 1998, Mr. Raymond briefed the Exxon Board on the preliminary discussions with Mr. Noto regarding the possibility of a combination transaction between Exxon and Mobil. Mr. Raymond reviewed with the Board recent developments in the oil industry and his preliminary views on the potential near- and longer-term benefits and operating and capital synergies of such a combination transaction and some of the terms on which such a transaction might occur. The Exxon Board indicated its support for the objectives and opportunities to further enhance shareholder value described by Mr. Raymond and encouraged Mr. Raymond to continue to explore the possibility of a transaction which would achieve these objectives.

In early August 1998, Mr. Raymond and Mr. Noto continued telephone discussions on a number of important aspects of a possible merger, including possible relative ownership ranges. Not having identified a mutually acceptable range, in a conversation on August 5, Messrs. Raymond and Noto mutually agreed to discontinue discussions. On August 6, Mr. Noto notified the Mobil Board of the discontinuation of discussions between Exxon and Mobil.

On August 11, 1998, The British Petroleum Company p.1.c. and Amoco Corporation announced the terms of their merger agreement. In any negotiation, price information from recent, comparable deals helps the parties identify a benchmark price range for their transaction. Before BP/Amoco was announced, Exxon and Mobil could only compare their proposed transaction with recent deals involving companies that were much smaller or in different industries, Pricing in these other deals varied widely and did not help Exxon and Mobil identify an appropriate range for their discussions. BP/Amoco, however, involved companies operating on a similar scale to Exxon and Mobil within the same industry. The transaction therefore provided Exxon and Mobil with a better reference point from which to discuss price and other key terms.

Shortly thereafter, Mr. Raymond and Mr. Noto resumed their discussions taking into account this new pricing benchmark. They concluded that for discussions to progress, the parties would need to develop a better understanding of the potential near-term synergies and cost savings as well as longer-term capital efficiencies and strategic benefits that could be realized from a merger. They agreed to meet again in New Orleans on September 3, 1998.

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In mid-August 1998, the management of Mobil asked Goldman Sachs to undertake an analysis of strategic alternatives available to Mobil. In late August and September 1998, Mobil management met with Goldman Sachs to discuss Goldman Sachs' analyses, which included a preliminary analysis of a possible merger with Exxon as well as other possible alternatives, including preliminary, hypothetical analyses of possible combinations and joint venture transactions with large publicly-traded oil companies other than Exxon. At that time, Mobil had not advised Goldman Sachs that Mobil was engaged in discussions with Exxon regarding a potential transaction.

At the September 3 meeting, Messrs. Raymond and Matthews, together with Mr. Rene Dahan and Mr. Harry J. Longwell, senior vice presidents and directors of Exxon, met with Messrs. Noto and Gillespie and other senior executives of Mobil, including Mr. Eugene A. Renna, President, Chief Operating Officer and a director of Mobil. Discussions focused on Mobil's identification of potential near-term savings and longer-term benefits achievable from a potential merger. Mobil presented its preliminary analysis of the synergies which it believed would be achievable by the third anniversary of the closing. The scope of synergies discussed at this meeting included savings achievable through elimination of duplicative overheads at the corporate and operating levels; focusing the combined company's exploration and capital programs on high quality investments; and efficiencies resulting from economies of scale and sharing of best practices in, for example, refining operations, raw material purchasing, product transportation and handling of inventory. In addition, Mobil and Exxon agreed that achieving near-term cost reductions was not a sufficient reason to merge, and that it was essential that they also expect to achieve long-term benefits in order to justify merging. As examples of long-term benefits Exxon and Mobil discussed the ability of the combined company to use its capital more profitably than either company on its own and to compete more effectively with the scale and cost structure of the largest international firms. Exxon and Mobil acknowledged that these long-term benefits would be difficult to quantify.

On September 14, 1998, Goldman Sachs presented to the Mobil Board its analyses regarding the various possible transactions that might be considered by Mobil, including a possible merger with Exxon. Following its presentation, Goldman Sachs was requested to consider additional hypothetically possible transactions with large publicly-traded oil companies. At that time, Mobil had not advised Goldman Sachs that Mobil was engaged in discussions with Exxon regarding a potential transaction. After Goldman Sachs was excused from the meeting, Mr. Noto briefed the Mobil Board on the recent developments in discussions between Mobil and Exxon.

On September 16, 1998, Mr. Noto called Mr. Raymond to confirm that Mobil had provided Exxon with sufficient information for Exxon to perform its analysis regarding potential synergies. They discussed issues raised at the September 3 meeting, including the ability of the combined company to manage assets for a greater return than each company could achieve individually, and agreed to a further meeting at Exxon's headquarters on September 24. At this meeting, Messrs. Raymond and Matthews continued discussions with Messrs. Noto and

Gillespie principally on mutually acceptable relative ownership ranges, and near- and longer-term benefits of the merger. After this meeting. Mobil advised Goldman Sachs that Mobil was engaged in discussions with Exxon regarding a potential transaction.

At a regular meeting of the Mobil Board on September 25, 1998 at which Mobil's financial and legal advisors were present. Mr. Noto updated the Mobil Board on the status of the discussions between Exxon and Mobil. The Mobil Board discussed issues involving a possible merger with Exxon, including the two companies' differing views on the relative ownership by Mobil and Exxon shareholders of a combined company. The Mobil Board expressed its support for Mr. Noto's views in this regard. In addition, Goldman Sachs reviewed additional possible transactions with large publicly-traded oil companies that might be considered by Mobil.

On September 30, 1998, at the regular meeting of the Exxon Board, Mr. Raymond updated the board on his discussions with Mr. Noto, including the differing views on relative ownership ranges. The Exxon Board expressed its support for Mr. Raymond's views in this regard and encouraged Mr. Raymond to continue the discussions. Discussions on possible ownership ranges continued between Messrs. Raymond and Noto over the next few weeks.

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On October 15, 1998, Mr. Noto updated the Mobil Board on Mobil's strategic alternatives, the advantages of a combination with Exxon and the status of discussions between Mobil and Exxon regarding a possible merger. Other alternatives discussed by Mr. Noto included the possibility of Mobil remaining an independent company, the possibility of seeking an acquisition candidate, the possibility of pursuing one or more joint ventures, and the possibility of seeking to engage in a combination with a company other than Exxon. For the reasons contained in "Factors Considered by, and Recommendation of, the Mobil Board" beginning on page 1-24 of this proxy statement/prospectus, including that a transaction with Exxon was more feasible and was expected to yield greater benefits than the potential alternatives reviewed by Mobil, the Mobil Board viewed a combination with Exxon as sufficiently superior to other alternatives to make it worthwhile to continue considering such a transaction. The Mobil Board discussed the issues regarding a possible merger and authorized Mr. Noto to continue to pursue discussions with Exxon.

At a meeting on October 19, 1998 at Exxon's headquarters attended by Messrs. Raymond. Matthews. Noto and Gillespie, the parties reviewed the possible relative ownership ranges and expanded the discussions to include such issues as the representation of current Mobil directors on the board of the combined company; Mr. Noto's role in the management of the combined company; staffing and employee issues; the name and principal office locations of the combined company; and potential termination fees. Messrs. Raymond and Noto concluded that discussions should be further expanded to cover other terms of a possible transaction and should involve other senior employees and outside advisors.

On October 27, 1998, at a regular meeting of the Exxon Board Compensation Committee to which all non-employee members of the Exxon Board were invited, Mr. Raymond updated the Exxon Board on the discussions with Mobil. On October 29, 1998, at the regular meeting of the Mobil Board, Mr. Noto updated the Mobil Board on discussions with Exxon regarding a possible merger.

On October 28, 1998, Skadden, Arps, Slate, Meagher & Flom LLP, counsel to Mobil, provided a memorandum to Davis Polk & Wardwell, counsel to Exxon, outlining certain merger agreement terms proposed by Mobil for the transaction. The Mobil proposal outlined, among other things: a stock for stock merger in which the parties would account for the transaction as a pooling of interests; the representation of Mobil directors on the Exxon board after the merger; matters relating to the benefits of Mobil employees following the merger; mechanisms designed to address integration issues; provisions limiting the conditions to the consummation of a possible transaction and providing for the payment of termination fees if the merger agreement was terminated or the transaction was not consummated.

On November 4, 1998, Davis Polk provided a memorandum to Skadden outlining Exxon's responses to the proposal submitted by Mobil. On November 5, representatives of Exxon, Mobil and their counsel met in New York to discuss the merger agreement and open issues. Significant issues addressed included composition of the combined company's board and committees of such board, location of the combined company's headquarters, use of the Mobil brand name, the role of the transition committee, employee matters, conditions to closing, circumstances under which a termination fee would be payable, whether Mobil would grant a stock option to Exxon, and certain representations and warranties to be included in the merger agreement.

On October 16, 1998, Exxon informed J.P. Morgan that Exxon was interested in engaging J.P. Morgan as its financial advisor if discussions with Mobil regarding a possible transaction reached a more advanced stage. On November 9. 1998, Exxon entered into an engagement letter relating to the retention of J.P. Morgan as Exxon's financial advisor for the proposed transaction with Mobil.

During November 1998, Exxon and Mobil exchanged due diligence request lists and representatives of both companies and their advisors participated in a video conference and numerous telephone calls and meetings to conduct reciprocal

legal, business, accounting and financial due diligence. A reciprocal confidentiality agreement was entered into on November 12.

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On November 12, 1998, Davis Polk delivered a first draft of the merger agreement to Mobil and its counsel. On November 13, Mobil and its counsel provided written comments on this draft to Exxon and its counsel and in the following weeks, Exxon and Mobil and their counsel continued to negotiate the provisions of this agreement. On November 17, a first draft of the stock option agreement was provided to Mobil and its counsel.

A meeting was held in Washington, D.C. on November 18, 1998, attended by Messrs. Raymond and Noto and other senior Exxon and Mobil officers, as well as outside counsel, to discuss regulatory issues as well as key open issues in the merger agreement, including closing conditions, payment of termination fees, employee matters, and the proposed grant by Mobil to Exxon of an option to buy Mobil stock.

On November 19, 1998, Messrs. Longwell and Dahan of Exxon met with Mr. Renna of Mobil in Washington, D.C. to discuss organizational issues for the combined company, including a proposal to organize the combined company along functional business lines rather than on the basis of geography.

Over the weekend of November 21, 1998, drafts of the merger agreement and the stock option agreement were delivered to the Mobil and Exxon Boards.

On November 22, 1998, Mobil formalized its retention of Goldman Sachs as its financial advisor for the proposed transaction with Exxon by entering into an engagement letter with Goldman Sachs.

On November 22, 1998, the Mobil Board held a special meeting at which it was briefed on the status of discussions between Exxon and Mobil and reviewed the relevant financial, accounting and legal considerations of the proposed transaction. At the meeting, Goldman Sachs made a preliminary financial presentation that was similar to the final presentation made at the December 1, 1998 meeting of the Mobil Board. Skadden reviewed the terms and conditions of the proposed merger agreement and stock option agreement, as well as remaining open issues, and reviewed with the Mobil Board its fiduciary duties under Delaware law. In addition, Hogan & Hartson and Linklaters & Alliance, Mobil's regulatory counsel, presented their analyses of regulatory matters and discussed related issues with the Mobil Board. Ernst & Young LLP also reviewed with the Mobil Board accounting matters relating to the proposed merger and issued a letter to the Mobil Board from E&Y concurring with Mobil's conclusion that the merger should be accounted for as a pooling of interests. At the conclusion of the November 22 meeting, the Mobil Board authorized Mobil management to continue discussions with Exxon regarding a possible merger.

On November 23, 1998, Mr. Noto telephoned Mr. Raymond to discuss, among other things, open issues in the merger agreement and the stock option agreement.

At the regular meeting of the Exxon Board on November 25, 1998, at which all of Exxon's directors were present, Exxon's directors were briefed on the objectives and strategic benefits, both near- and longer-term, from a merger with Mobil and the possibility of further enhancing shareholder value over what could be achieved on a stand alone basis, as well as on the status of the discussions with Mobil. J.P. Morgan presented its preliminary financial analysis of the merger. PricewaterhouseCoopers LLP discussed accounting matters relating to the merger and submitted to the Exxon Board a letter from PwC concurring with Exxon's conclusion that the merger should be accounted for as a pooling of interests. In addition, Covington & Burling, Exxon's regulatory counsel, presented its analysis of regulatory matters. Davis Polk reviewed the terms and conditions of the proposed merger agreement and stock option agreement as well as remaining open issues, and reviewed the Exxon Board's legal duties and responsibilities. The Exxon Board authorized Exxon management to continue discussions with Mobil and to move toward finalizing a merger agreement to achieve the objectives discussed.

On November 26, 1998, Mr. Noto and Mr. Raymond spoke by telephone to discuss reports that had appeared in the media about a possible transaction between Exxon and Mobil. On November 27, 1998, prior to the opening of NYSE trading, Exxon and Mobil issued a joint statement confirming that the two companies were in discussions concerning a possible business combination.

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Over the course of the weekend of November 27, 1998, Exxon and Mobil representatives and outside counsel continued discussions towards resolving open issues. On the evening of November 30, Messrs. Raymond and Noto met and reached agreement in principle, subject to Board approval, on the remaining unresolved terms of the merger, including the exchange ratio and the resulting exercise

price in the stock option agreement.

At a special meeting of the Exxon Board on December 1, 1998, Mr. Raymond reviewed the near—and longer-term strategic benefits of a merger with Mobil and the status of the transaction; J.P. Morgan delivered its fairness opinion to the Exxon Board; and Davis Polk made a presentation on the terms and conditions of the merger agreement and the stock option agreement and updated the Board on how remaining open issues had been resolved. After due consideration, the Exxon Board unanimously approved the merger agreement and the stock option agreement and the related merger matters described in this document.

At a special meeting of the Mobil Board held on December 1, 1998 to consider the merger, the Mobil Board received a financial presentation from and the fairness opinion of Goldman Sachs. Skadden then reviewed the changes in the terms of the proposed merger agreement and stock option agreement since the November 22 meeting. Following these presentations, and a discussion regarding the strategic benefits of the proposed merger and of the terms and conditions of the merger agreement and the stock option agreement, the Mobil Board, with one director voting against, approved the merger agreement and the stock option agreement and determined to recommend that the Mobil shareholders approve the merger agreement and the merger.

Following the approval of their Boards, Exxon and Mobil executed the merger agreement and the stock option agreement, and issued a joint press release immediately thereafter prior to the opening of NYSE trading.

Our Reasons for the Merger

Exxon and Mobil each have a long history of being managed to enhance shareholder value. Individually, both companies have positive prospects for the future. Rowever, we believe that by combining the two companies, we can create substantially more shareholder value than could be achieved by the companies on their own. This is the fundamental reason for the merger.

Simply having a bigger company is not a reason for us to merge. To create shareholder value, the new company must be better. As we explain in more detail below, we believe that by combining the businesses of Exxon and Mobil we can save money, increase profits and returns, and reduce risk. We will also have greater financial, technological, and human resources. This will increase our ability to handle large, complex, and costly international energy projects.

The scale and cost structure of the combined company will help us compete more effectively with the largest firms outside the U.S. These include other multi-national oil companies which have recently combined or formed joint ventures, as well as the very large state-owned oil companies which have been rapidly expanding outside their traditional areas.

The benefits of the merger fall broadly in two categories: near-term operating synergies and capital productivity improvements. We believe these benefits depend on the merger and are not available to the companies on their own.

Near-term Operating Synergies. We believe we can run the combined company more efficiently than either company on its own. Specifically, we expect the combined company to achieve about \$2.8 billion in annual pre-tax benefits from operating synergies. By operating synergies we mean increases in production, sales, and efficiency, decreases in unit costs and overhead expense, and other benefits made possible by combining complementary operations.

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About two-thirds of these benefits should come from:

- Streamlining the combined organization, which we can run with less administrative and overhead cost than two separate organizations; and
- o Eliminating excess capacity, duplicate facilities, and redundant operations.

Additional synergy benefits should come from:

- o Exploring for oil and gas more efficiently in regions where the companies operate separately today;
- applying each company's best business practices across the worldwide operations of the combined company; and
- Coordinating purchases of raw materials across the two companies' extensive supply, refining and chemicals networks.

We expect to realize the full \$2.8 billion in annual pre-tax synergy benefits by the third year after the merger. During the first two years, the benefits should begin to be realized but will be partly offset by one-time costs we estimate at \$2 billion. These are non-recurring costs that we expect to incur to integrate the businesses. On a net basis, the earnings impact should be neutral in the first year after the merger and

positive by the second year.

Capital Productivity Improvements. We also believe the combined company can use its capital more profitably than either company on its own. As discussed below. Exxon Mobil will, by combining complementary assets, have a stronger presence in those regions of the world with the best potential for future oil and gas discoveries and production. We will also have an improved and more balanced presence in high-growth markets and businesses. This will provide a broader menu of capital investment opportunities from which to choose the best projects to advance. As a result, we believe the combined company will be able to maintain or improve earnings while spending less on capital projects overall. Additionally, we believe that many of our existing assets will perform better when combined due to efficiencies of scale, cost savings, and sharing of best management

The businesses and assets of Exxon and Mobil are highly complementary in key areas. As a result, the combined company should be a top competitor among international energy companies in all three of its main businesses: exploration and production. refining and marketing, and chemicals. In terms of both geography and areas of business, the combined company will also have a more diverse portfolio. Diversification helps us better spread and manage the risks inherent in our volatile industry. This means that a downturn in a particular country or business will have less impact on overall performance.

Exploration and Production. The combined company will have an improved portfolio in key exploration and production areas of the world today. For example:

- c Exxon's leadership position in deepwater exploration in West Africa will combine with Mobil's existing production and exploration acreage in Nigeria and Equatorial Guinea;
- c In the Caspian, Exxon's strong presence in Azerbaijan will combine with Mobil's similar position in Kazakhstan, including its significant interest in the Tengiz field, and its presence in Turkmenistan;
- Complementary exploration and production operations also exist in South America, Russia and Eastern Canada;

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o In the higher-growth natural gas business, the companies will combine their own leading technologies and large positions in several of the world's key markets, including North America, Europe and Asia-Pacific.

On a worldwide basis, the combined company will have proved oil and natural gas reserves of 21 billion oil-equivalent barrels.

Refining and Marketing. In refining operations, the combined company will have access to an expanded network of refineries for manufacturing high quality fuel products and feedstocks. Both companies have traditionally focused on maintaining highly efficient, technologically up-to-date refineries. These facilities have good locations and are integrated with lubricant or chemical manufacturing facilities, providing additional opportunities to improve efficiency.

In retail marketing, the combined company will benefit from an expanded worldwide base of branded service stations, as well as Exxon's and Mobil's global brand recognition. By sharing expertise, we expect to enhance the combined company's offering of high-quality products and services and attractive, efficient store designs.

In lubricants, Exxon's industry leading basestock manufacturing business will combine with Mobil's expertise in synthetic lubricants and leading position in worldwide finished product sales.

Chemicals. On a worldwide basis, the combined company will have a greater olefin, polyolefin and paraxylene capacity. This will provide opportunities to save money through manufacturing efficiencies. We also believe that a common focus on efficiency, use of cost-effective raw materials, and further integration of fuels and chemicals operations at individual sites will improve overall performance.

Proprietary Technologies. Exxon and Mobil have each invested in extensive research and development programs over the years. As a result, each company has its own exclusive patents on valuable technologies. The merger will let us share these proprietary technologies and apply them across the combined business. For example, in the exploration and production business, we will benefit from sharing deepwater, arctic, heavy oil and remote natural gas technologies. In the refining and marketing and chemicals businesses, we will benefit from sharing catalysis technologies and proprietary processes for manufacturing fuels, chemicals, and synthetic lubricants.

Exxon and Mobil share a number of important long-term corporate values, including:

- o A commitment to enhancing shareholder value;
- An emphasis on efficiency, investment discipline and asset productivity;
- o A focus on product quality and customer satisfaction; and
- o A commitment to safety, health and environmental care.

Both companies also benefit from talented and dedicated employees with a long-standing commitment to excellence. We believe these shared values will facilitate a relatively smooth integration of the two companies.

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Exxon Mobil's Senior Management Team

Our senior management team is expected to consist of the six individuals named below. This team reflects that Exxon Mobil will be organized along business lines with three major business units: * exploration & production * refining and marketing and * chemicals. A transition committee consisting of Mr. Raymond and Mr. Noto is responsible for recommending to the Exxon Mobil Board the other senior officers.

Lee R. Raymond Lucic A. Noto Harry J. Longwell Rene Dahan Eugene A. Renna Robert E. Wilhelm Chairman and CEO Vice Chairman Senior Vice President Senior Vice President Senior Vice President Senior Vice President

Mr. Longwell will be responsible for exploration and production. Mr. Dahan will be responsible for chemicals. Mr. Renna will be responsible for refining and marketing. All six individuals will be on the Exxon Mobil Board.

Factors Considered by, and Recommendation of, the Exxon Board

At a meeting of the Exxon Board held on December 1, 1998, after due consideration, the Exxon Board unanimously:

- determined that the merger agreement, the merger, the stock option agreement, the amendments to Exxon's charter and the related transactions are fair to and in the best interests of Exxon and its shareholders.
- (ii) approved the merger agreement, the merger, the stock option agreement, the charter amendments and the related transactions, and
- (iii) determined to recommend that the shareholders of Exxon approve the merger, including the issuance of Exxon common stock in the merger, and the charter amendments. Accordingly, the Exxon Board recommends that the Exxon shareholders vote "FOR" the approval of the merger, including the issuance of Exxon common stock in the merger, and the charter amendments.

In approving the transaction and making these recommendations, the Exxon Board consulted with Exxon's management as well as its outside legal counsel and financial advisor, and considered the following material factors:

- (1) all the reasons described above under "Our Reasons for the Merger", including the near- and longer-term synergies and productivity improvements expected to be available to the combined company;
- (2) the possibility, as alternatives to the merger, of pursuing an acquisition of or a business combination or joint venture with an entity other than Mobil and the Exxon Board's conclusion that a transaction with Mobil is more feasible, and is expected to yield greater benefits, than the likely alternatives. The Exxon Board reached this conclusion for reasons including Mobil's interest in pursuing a transaction with Exxon. Exxon's view that the transaction could be acceptably completed from a timing and regulatory standpoint, and Exxon management's assessment of the alternatives and the expected benefits of the merger and compatibility of the companies as described under "Our Reasons for the Merger" above;

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(3) the fact that Exxon shareholders would hold approximately 70% of the outstanding stock of the combined company after the merger;

- (4) comparisons of historical financial measures for Exxon and Mobil, including earnings, return on capital employed and cash flow, and comparisons of historical operational measures for Exxon and Mobil, including hydrocarbon reserve replacement, hydrocarbon production and refinery runs;
- (5) current industry, economic and market conditions, including current low prices for crude oil and refined products. The Exxon Board considered that, when oil prices and refining margins fall, companies must improve the performance of their internal operations to maintain profitability. The Exxon Board considered it likely that low prices would lead to further consolidation in the oil and gas industry because, as explained under "Our Reasons for the Merger," combining operations can help companies save money and operate more efficiently;
- (6) the intended accounting of the merger as a pooling of interests which results in combined financial statements prepared on a basis consistent with the underlying view that shareholder interests in the two companies have simply been combined, and in the preservation of the historical cost approach for both Exxon and Mobil. This will facilitate future comparison and benchmarking of Exxon Mobil against our key international competitors;
- (?) the ability to complete the merger as a tax-free reorganization for U.S. federal income tax purposes;
- (8) the terms and conditions of the merger agreement, including the conditions to closing and the termination fees payable under certain circumstances (see "The Merger Agreement -- Conditions to the Completion of the Merger" and "The Merger Agreement -- Termination of the Merger Agreement");
- (9) the grant to Exxon of an option to acquire Mobil stock exercisable under certain circumstances pursuant to the stock option agreement (see "The Merger Agreement--Stock Option Agreement");
- (10) the analyses and presentations of J.P. Morgan, and J.P. Morgan's written opinion to the effect that, as of December 1, 1998, and based upon and subject to the various considerations set forth in its opinion, the consideration proposed to be paid by Exxon in the merger was fair from a financial point of view to Exxon;
- (11) the role that Exxon's current management would play in the management of the combined company and the composition of the combined company's Board of Directors;
- (12) the challenges of combining the businesses of two major corporations of this size and the attendant risk of not achieving the expected cost savings and other benefits, as discussed under "Cautionary Statement Concerning Forward-Looking Statements", and of diverting management focus and resources from other strategic opportunities and operational matters for an extended period of time; and
- (13) that While the merger is likely to be completed, there are risks associated with obtaining necessary approvals, and as a result of certain conditions to the completion of the merger, it is possible that the merger may not be completed even if approved by shareholders (see "The Merger Agreement --Conditions to the Completion of the Merger").

In view of the wide variety of factors considered in connection with its evaluation of the merger and the complexity of these matters, the Exxon Board did not find it useful to and did not attempt to quantify, rank or otherwise assign relative weights to these factors. The Exxon Board relied on the experience and expertise of J.P. Morgan, its financial advisor, for quantitative analysis of the financial terms of the merger. See "Opinions of

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Financial Advisors--Opinion of Exxon Financial Advisor". In addition, the Exxon Board did not undertake to make any specific determination as to whether any particular factor, or any aspect of any particular factor, was favorable or unfavorable to the Exxon Board's ultimate determination, but rather the Exxon Board conducted an overall analysis of the factors described above, including through discussions with and questioning of Exxon's management and legal, financial and accounting advisors. In considering the factors described above, individual members of the Exxon Board may have given different weight to different factors.

The Exxon Board considered all these factors as a whole, and overall considered the factors to be favorable to and to support its determination. However, the general view of the Exxon Board was that factors 12 and 13 were uncertainties or risks relating to the transaction, and that the other reasons and factors described above were generally considered favorable.

Pactors Considered by, and Recommendation of, the Mobil Board

At its December 1, 1998 meeting, the Mobil Board, with one director voting against, determined that the merger agreement and the related transactions,

including the merger, are fair to and in the best interests of Mobil and Mobil's shareholders. Accordingly, the Mobil Board has adopted the merger agreement, with one director voting against such adoption, and the Mobil Board recommends that Mobil's shareholders vote "FOR" approval of the merger agreement and the merger.

In the course of reaching its decision to adopt the merger agreement, the Mobil Board consulted with Mobil's management, as well as its outside legal counsel and its financial advisor, and considered the following material factors:

- all the reasons described above under "Our Reasons for the Merger", including the near- and longer-term synergies and productivity improvements expected to be available to the combined company;
- (2) the risks and potential rewards associated with, as an alternative to the merger, continuing to execute Mobil's strategic plan as an independent entity. Such risks include, among others, the risks associated with remaining independent amidst industry-wide consolidation, and such rewards include, among others, the ability of existing Mobil shareholders to partake in the potential future growth and profitability of Mobil;
- (3) the possibility, as alternatives to the merger, of seeking to acquire another company, seeking to engage in one or more joint ventures or seeking to engage in a combination with a company other than Exxon and the Mobil Board's conclusion that a transaction with Exxon is more feasible, and is expected to yield greater benefits, than the likely alternatives. The Mobil Board concluded that a combination with Exxon was more feasible than the other alternatives it reviewed for reasons including the fact that Exxon was interested in pursuing a transaction with Mobil, and Mobil's view that the transaction could be acceptably completed from a timing and regulatory standpoint, and would yield greater benefits than the alternatives given Exxon's financial strength, and the ability of a combined company to fund a greater number of long-term growth projects and to compete effectively;
- (4) the value of the exchange ratio provided for in the merger agreement relative to the then-current market prices and historical trading prices of Mobil and Exxon shares over the past year and relative to the stock price premiums paid in mergers of comparable size as discussed in Goldman Sachs' selected transaction analysis, that the premium offered in the merger was within the range of premiums paid in comparable transactions, and that Mobil's shareholders would hold approximately 30% of the outstanding stock of the combined company after the merger;
- (5) comparisons of historical financial measures for Mobil and Exxon, including earnings, return on capital employed and éash flow, and comparisons of historical operational measures for Mobil and Exxon, including hydrocarbon reserve replacement, hydrocarbon production and refinery runs;

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- (6) the prospects of Mobil to compete effectively in the future, the prospects of Exxon based on Goldman Sachs' due diligence and its analysis of publicly available information including earnings estimates compiled by T/B/E/S and First Call, and Mobil management's view, based on its due diligence, of Exxon's prospects to compete effectively in the future;
- (7) current industry, economic and market conditions, including current low prices for crude oil and refined products. The Mobil Board considered that, when oil prices and refining margins fall, companies must improve the performance of their internal operations to maintain profitability. The Mobil Board considered it likely that low prices would lead to further consolidation in the oil and gas industry because, as explained under "Our Reasons for the Merger," combining operations can help companies save money and operate more efficiently;
- (8) the intended accounting of the merger as a pooling of interests which results in combined financial statements prepared on a basis consistent with the underlying view that shareholder interests in the two companies have simply been combined, and in the preservation of the historical cost approach for both Exxon and Mobil. This will facilitate future comparison and benchmarking of Exxon Mobil against our key international competitors,
- (9) the ability to complete the merger as a tax-free reorganization for  $U.S.\$ federal income tax purposes;
- (10) the terms and conditions of the merger agreement, which include restrictions on the conduct of Mobil's business pending closing which permit Mobil generally to conduct its business in the ordinary course during that period (see "The Merger Agreement");
- (11) the potential effect of the terms of the merger agreement with respect to possible third-party proposals to acquire Mobil after execution of the merger agreement, including that if any third party made a superior

proposal (as described under "The Merger Agreement--Termination of the Merger Agreement"), the Mobil Soard could provide information to and engage in negotiations with such third party, subject to the terms and conditions of the merger agreement;

- (12) that while the termination payment provisions of the merger agreement could have the effect of discouraging alternative proposals for a business combination with Mobil and that the stock option agreement could prevent an alternative business combination with Mobil from being accounted for as a pooling of interests, these provisions would not preclude bona fide alternative proposals, and that the size of the termination fee was reasonable in light of the size and benefits of the transaction;
- (13) the analyses and presentations prepared by Goldman Sachs, and Goldman Sachs' written opinion to the effect that, as of December 1, 1998, and subject to the various considerations set forth in its opinion, the exchange ratio was fair from a financial point of view to Mobil's shareholders;
- (14) the role that Mobil's current management is expected to play in the management of the combined company, in particular Mobil management's participation in the transition and the intention of Exxon and Mobil to take advantage of the best management resources of both companies in Exxon Mobil:
- (15) that six of the Mobil Board's members would become directors of Exxon Mobil, as described under "The Merger Agreement--Exxon Mobil Board and Related Matters";
- (16) that while there would be the expected reduction of workforce affecting both Mobil and Exxon employees, Mobil employees would be given a fair opportunity to be considered for jobs in the combined company, and Mobil employees who were not offered positions in the combined company would be

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entitled to receive severance benefits under the Mobil severance plan described under "Interests of Certain Persons in the Merger" that the Mobil Board believed to be fair;

- (17) the fact that while Exxon Mobil's corporate headquarters will be located in Irving, Texas, Exxon Mobil's downstream headquarters will be located in Fairfax, Virginia;
- (18) that while the merger is likely to be completed, there are risks associated with obtaining necessary approvals, and as a result of certain conditions to the completion of the merger, it is possible that the merger may not be completed even if approved by shareholders (see "The Merger Agreement--Conditions to the Completion of the Merger");
- (19) that although, pending completion of the proposed merger, Mobil's relationships with customers, governments and partners might be negatively affected because of uncertainty surrounding Mobil's future status and direction, the Mobil Board believed that any such effect would cease once the merger was completed; and
- (20) the interests that certain executive officers and directors of Mobil may have with respect to the merger in addition to their interests as shareholders of Mobil generally (see "Interests of Certain Persons in the Merger").

In view of the wide variety of factors considered in connection with its evaluation of the merger and the complexity of these matters, the Mobil Board did not find it useful to and did not attempt to quantify, rank or otherwise assign relative weights to these factors. The Mobil Board relied on the experience and expertise of Goldman Sachs, its financial advisor, for quantitative analysis of the financial terms of the merger. See "Opinions of Financial Advisors--Opinion of Mobil Financial Advisors'. In addition, the Mobil Board did not undertake to make any specific determination as to whether any particular factor, or any aspect of any particular factor, was favorable or unfavorable to the Mobil Board's ultimate determination, but rather the Mobil Board conducted an overall analysis of the factors described above, including through discussions with and questioning of Mobil's management and legal, financial and accounting advisors. In considering the factors described above, individual members of the Mobil Board may have given different weight to different factors.

The Mobil Board considered all these factors as a whole, and overall considered the factors to be favorable to and to support its determination. However, the general view of the Mobil Board was that factor 20 was part of the general mix of available information without being clearly favorable or unfavorable, that factors 12, 16, 18 and 19 were uncertainties, risks or drawbacks relating to the transaction, and that the other reasons and factors described above were generally considered favorable.

Accounting Treatment

Exxon and Mobil intend for the merger to be accounted for under the "pooling of interests" method under the requirements of Opinion No. 16 (Business Combinations) of the Accounting Principles Board of the American Institute of Certified Public Accountants, the Financial Accounting Standards Board, and the rules and regulations of the SEC.

Exxon has received a letter regarding pooling dated November 25, 1998 from PWC. Its independent accounting firm. The letter states that, as of its date, based on certain information provided to PWC by Exxon and based on the E4Y letter described below, PWC concurred with Exxon's conclusion that no conditions existed which would preclude Exxon from accounting for the merger as a pooling of interests.

Mobil has received a letter regarding pooling dated November 22, 1998 from EAY, its independent auditing firm. The letter states that, as of its date, EAY concurred with Mobil's conclusion that no conditions existed relating to Mobil that would preclude Exxon from accounting for the merger as a pooling of interests.

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The receipt of letters from PwC and E4Y dated as of the closing date of the merger reconfirming their concurrence with the conclusions of Exxon's and Mobil's managements as to the appropriateness of pooling of interests accounting treatment is a condition to the closing of the merger.

Under the pooling of interests accounting method, the reported balance sheet amounts and results of operations of the separate companies for prior periods will be combined, reclassified and conformed, as appropriate, to reflect the combined financial position and results of operations for Exxon Mobil. See "Unaudited Pro Forma Condensed Combined Financial Statements".

Material Federal Income Tax Consequences of the Merger

The following discussion summarizes the opinions of Davis Polk & Wardwell and Skadden, Arps, Slate, Meagher & Flom LLP as to the material federal income tax consequences of the merger. We have filed these opinions with the SEC as exhibits to the registration statement related to this joint proxy statement/prospectus. See "Where You Can Find More Information" on page VI-1. This discussion is based upon the Internal Revenue Code of 1986, as amended, the regulations promulgated under the Code, Internal Revenue Service rulings, and judicial and administrative rulings in effect as of the date hereof, all of which are subject to change, possibly with retroactive effect. This discussion does not address all aspects of federal income taxation that may be relevant to a shareholder in light of the shareholder's particular circumstances or to those Mobil shareholders subject to special rules, such as shareholders who are not citizens or residents of the United States, financial institutions, tax-exempt organizations, insurance companies, dealers in securities, shareholders who acquired their Mobil stock pursuant to the exercise of options or similar derivative securities or otherwise as compensation or shareholders who hold their Mobil stock as part of a straddle or conversion transaction. This discussion assumes that Mobil shareholders hold their respective shares of Mobil stock as capital assets within the meaning of Section 1221 of the Code.

It is a condition to the obligations of Mobil and Exxon to complete the merger that each receive a legal opinion from its counsel that the merger constitutes a tax-free reorganization, within the meaning of Section 368 of the Code, for federal income tax purposes. These legal opinions will assume the absence of certain changes in the existing facts and may rely on assumptions, representations and covenants made by Mobil, Exxon and others, including those contained in certificates of officers of Mobil and Exxon. If any of these factual assumptions is inaccurate, the tax consequences of the merger could differ from those described here. The opinions regarding the tax-free nature of the merger neither bind the IRS nor preclude the IRS from adopting a contrary position. Neither Mobil nor Exxon intends to obtain a ruling from the IRS with respect to the tax consequences of the merger.

Federal Income Tax Consequences to Exxon Shareholders, Holders of Exxon stock will not recognize any gain or loss for federal income tax purposes as a result of the merger.

Federal Income Tax Consequences to Mobil Shareholders. Except as provided below, holders of shares of Mobil stock will (1) not recognize any gain or loss for federal income tax purposes as a result of the exchange of their shares of Mobil stock for Exxon Mobil stock in the merger except with respect to cash received instead of a fractional share of Exxon Mobil common stock and (2) have a tax basis in the Exxon Mobil stock received in the merger equal to the tax basis of the Mobil stock surrendered in the merger less any tax basis of the Mobil stock surrendered that is allocable to a fractional share of Exxon Mobil common stock for which cash is received. The Mobil shareholders' holding period with respect to the Exxon Mobil stock received in the merger will include the holding period of the Mobil stock surrendered in the merger.

To the extent that a holder of shares of Mobil common stock receives cash instead of a fractional share of Exxon Mobil common stock, the holder will be required to recognize gain or loss for federal income tax purposes, measured by the difference between the amount of cash received and the portion

of the tax basis of the holder's shares of Mobil common stock allocable to such fractional share of Exxon Mobil common stock. This gain or loss will be a capital gain or loss and will be a long-term capital gain or loss if the share of Mobil common stock exchanged for the fractional share of Exxon Mobil common stock was held for more than one year at the effective time of the merger.

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Under the merger agreement, Mobil will pay any transfer taxes incurred as a result of a change in ownership of Mobil, including transfer taxes that under applicable law may be the primary liability of the holders of Mobil stock. Although the matter is not free from doubt (because of the absence of legislative, judicial or other authority directly on point), Mobil's payment of transfer taxes for which the Mobil shareholders are primarily liable, if any, may be taxable as a dividend to the Mobil shareholders for federal income tax purposes.

Federal Income Tax Consequences to Mobil, Exxon and the Merger Subsidiary. None of Exxon, Mobil, or the merger subsidiary will recognize gain or loss for federal income tax purposes as a result of the merger.

WE INTEND THIS DISCUSSION TO PROVIDE ONLY A SUMMARY OF THE MATERIAL FEDERAL INCOME TAX CONSEQUENCES OF THE MERGER. WE DO NOT INTEND THAT IT BE A COMPLETE ANALYSIS OR DESCRIPTION OF ALL POTENTIAL FEDERAL INCOME TAX CONSEQUENCES OF THE MERGER. IN ADDITION, WE DO NOT ADDRESS TAX CONSEQUENCES WHICH MAY VARY WITH, OR ARE CONTINGENT UPON, INDIVIDUAL CIRCUMSTANCES, MOREOVER, EXCEPT FOR THE DISCUSSION OF TRANSFER TAXES ABOVE, WE DO NOT ADDRESS ANY NON-INCOME TAX OR ANY FOREIGN, STATE OR LOCAL TAX CONSEQUENCES OF THE MERGER. ACCORDINGLY, WE STRONGLY URGE YOU TO CONSULT YOUR TAX ADVISOR TO DETERMINE YOUR PARTICULAR UNITED STATES FEDERAL, STATE, LOCAL OR FOREIGN INCOME OR OTHER TAX CONSEQUENCES RESULTING FROM THE MERGER. WITH RESPECT TO YOUR INDIVIDUAL CIRCUMSTANCES.

Regulatory Matters

U.S. Antitrust. Under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and the related rules the merger may not be completed until notifications have been given, certain information has been furnished to the FTC and specified waiting period requirements have been satisfied. During the week of December 14, 1998 Exxon and Mobil each filed the required notification and report forms under the MSR act with the FTC and the Antitrust Division of the United States Department of Justice. On January 15, 1999, the FTC issued a request for additional information and other documentary materials to Exxon and Mobil relating to the merger. The merger may not be completed until 20 days following substantial compliance with this request by both parties, unless the waiting period is terminated earlier. If it believes that the merger would violate the federal antitrust law by substantially lessening competition in any line of commerce affecting U.S. consumers, the FTC has the authority to challenge the merger on antitrust grounds by seeking a federal court order temporarily enjoining the transaction pending conclusion of an administrative hearing. The FTC may also proceed with an administrative proceeding if the injunction is denied, and if the merger is found to be anticompetitive, challenge it after the fact. We can give no assurance that a challenge to the merger will not be made or, if such a challenge is made, that it would be unsuccessful. In addition, a number of state attorneys general have indicated their intent to review the proposed merger and to coordinate that review with the FTC. Expiration or termination of the HSR Act waiting period is a condition to the merger. See "The Merger Agreement -- Conditions to the Completion of the Merger" on page I-58.

European Union. Under Council Regulation No. 4064/89 of the European Commission and accompanying regulations, the merger is subject to review by the European Commission. Exxon and Mobil informally notified the EC of the merger on December 1, 1998 and expect to file formal notifications with the EC of the merger agreement by the end of April 1999. Completion of review under the EC merger regulation is a condition to the merger. See "The Merger Agreement--Conditions to the Completion of the Merger" on page I-58.

Other Laws. Exxon and Mobil conduct operations in a number of jurisdictions where other regulatory filings or approvals may be required or advisable in connection with the completion of the merger. Exxon and Mobil are currently in the process of reviewing whether other filings or approvals may be required or desirable in these other jurisdictions. We recognize that some of these filings may not be completed before the closing, and that some of these approvals, which are not as a matter of practice required to be obtained prior to effectiveness of a merger transaction, may not be obtained prior to the closing.

General. It is possible that governmental entities having jurisdiction over Exxon and Mobil may seek regulatory concessions as conditions for granting approval of the merger. If any regulatory body's approval contains terms or imposes conditions or restrictions relating or applying to, or requiring changes in or limitations

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on, the operation or ownership of any asset or business of Exxon, Mobil or any of their subsidiaries, or on Exxon Mobil's ownership of Mobil or requiring asset divestitures, which could reasonably be expected to result in a substantial detriment to Exxon, Mobil and their subsidiaries, taken as a whole, after the closing, Exxon can decline to close under the merger agreement. We can give no assurance that the required regulatory approvals will be obtained on terms that satisfy the conditions to closing of the merger or within the time frame contemplated by Exxon and Mobil. See "The Merger Agreement--Conditions to the Completion of the Merger" on page I-58.

#### Appraisal Rights

Holders of Exxon common stock are not entitled to dissenters' appraisal rights under New Jersey law in connection with the merger. Holders of Mobil Common stock do not have dissenters' appraisal rights under Delaware law in connection with the merger because the shares of Exxon Mobil common stock that such holders will be entitled to receive in the merger will be listed on the New York Stock Exchange at the closing. See "Chapter Three--Comparison of Shareholder Rights--Appraisal Rights". Dissenters' appraisal rights are available in connection with the merger to the trustee of the Mobil ESOP, the sole record holder of Mobil ESOP preferred stock, if the trustee complies with the procedural requirements of the Delaware dissenters' rights statute.

Federal Securities Laws Consequences, Stock Transfer Restriction Agreements

This joint proxy statement/prospectus does not cover any resales of the Exxon Mobil common stock to be received by the shareholders of Mobil upon completion of the merger, and no person is authorized to make any use of this joint proxy statement/prospectus in connection with any such resale.

All shares of Exxon Mobil common stock received by Mobil shareholders in the merger will be freely transferable, except that shares of Exxon Mobil common stock received by persons who are deemed to be "affiliates" of Mobil under the Securities Act of 1933, as amended, at the time of the Mobil meeting may be resold by them only in transactions permitted by Rule 145 under the 1933 Act or as otherwise permitted under the 1933 Act. Persons who may be deemed to be affiliates of Mobil for such purposes generally include individuals or entities that control, are controlled by or are under common control with Mobil and include directors and executive officers of Mobil. The merger agreement requires Mobil to use its reasonable best efforts to cause each of such affiliates to execute a Written agreement to the effect that such persons will not offer, sell or otherwise dispose of any of the shares of Exxon Mobil common stock issued to them in the merger in violation of the 1933 Act or the related SEC rules.

In addition, each of the directors and some of the executive officers of Exxon and Mobil have executed written agreements prohibiting them from selling, transferring or otherwise disposing of, or acquiring or selling any options or other securities relating to, securities of Exxon or Mobil that would be intended to reduce the individual's risk relative to, any shares of Exxon common stock or Mobil common stock beneficially owned by him or her during the period beginning 30 days prior to the closing and ending at such time as financial results covering at least 30 days of combined operations of Exxon and Mobil have been publicly released by Exxon Mobil after the merger.

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# COMPARATIVE PER SHARE MARKET PRICE AND DIVIDEND INFORMATION

Exxon common stock and Mobil common stock are each listed on the NYSE. Exxon's ticker symbol on the NYSE is "XON" and Mobil's ticker symbol on the NYSE is "XON" and mobil's ticker symbol on the NYSE is "MOB". The following table shows, for the periods indicated, the high and low of the last reported closing prices per share of Exxon common stock and Mobil common stock, as reported on the Consolidated Tape, and the dividends per share.

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<s> 1997</s>	<c></c>		<	C>	**	.>	~ C		-	-<	~	
First Quarter		55.625 65.125 67.250 66.875	\$	48.250 49.875 58.625 54.750	\$	0.395 0.410 0.410 0.410	\$	68.000 72.250 78.000 77.500	\$	60.625 60.000 69.625 66.438	S	0.530 0.530 0.530 0.530
1998 First Quarter Second Quarter	\$	70.000 76.000	\$	56.625 65.375	\$	0.410 0.410	\$	83.613 82.813	\$	63.750 73.438	9	0.570 0.570
Third Quarter		73.813		62.000 69.438		0.410		80.000 91.250		62.43B 71.000		0.570
1999												
First Quarter Second Quarter (through	\$	76.375	\$	64.313	\$	0.410	\$	95.875	\$	80.063	ş	0.570
April 1)		70.375		69.438		0.000		88.063		86.625		0.000

</TABLE>

- Exxon prior period share prices and dividends restated for a two-for-one stock split effective March 14, 1997.
- (2) Mobil prior period share prices and dividends restated for a two-for-one stock split effective May 20, 1997.

On November 25, 1998, the last full trading day before Exxon and Mobil issued a joint press release confirming that they were in discussions concerning a possible combination, the last reported per share closing price was \$72.588 for Exxon common stock and \$78.375 for Mobil common stock. On November 30, 1998, the last full trading day before the public announcement of the proposed merger, the last reported closing price was \$75.000 for Exxon common stock and \$86.000 for Mobil common stock. On April 1, 1999, the most recent practicable date prior to the printing of this joint proxy statement/prospectus, the last reported closing price was \$70.125 for Exxon common stock and \$87.375 for Mobil common stock. We urge you to obtain current market quotations prior to making any decision with respect to the merger.

Following the merger, Exxon Mobil common stock will be traded on the NYSE under the ticker symbol "XOM".

The merger agreement permits Exxon and Mobil to pay, prior to the closing, regular quarterly cash dividends to holders. The parties have agreed in the merger agreement to coordinate declaring dividends and the related record dates and payment dates so that Mobil shareholders do not receive two dividends, or fail to receive one dividend. For any single calendar quarter with respect to their Mobil shares and the Exxon Mobil shares to be received by them in the merger.

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Exxon Mobil expects to continue to pay quarterly dividends on Exxon Mobil common stock after completion of the merger. The payment of dividends by Exxon Mobil in the future, however, will depend on business conditions, Exxon Mobil's financial condition and earnings and other factors.

Effect of Merger on Mobil Dividend Reinvestment Plan

Upon completion of the merger, Mobil's Stock Purchase and Dividend Reinvestment Plan (the "Mobil DRIP") will terminate and participants in the plan will be automatically enrolled in Exxon Mobil's Shareholder Investment Program (the "Exxon Mobil SIP"). Exxon Mobil shares issued in exchange for Mobil DRIP shares will be held in book-entry form by the administrator of the Exxon Mobil SIP and cash dividends paid by Exxon Mobil on those shares will be reinvested in additional Exxon Mobil shares. Participants in the Exxon Mobil SIP can obtain certificates for their plan shares, change dividend reinvestment levels, or withdraw from the plan by following specified procedures. Mobil DRIP participants will receive more information on the Exxon Mobil SIP as soon as practicable after completion of the merger.

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# UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS

The following unaudited pro forma condensed combined financial statements combine the historical consolidated balance sheets and statements of income of Exxon and Mobil giving effect to the merger using the pooling of interests method of accounting for a business combination.

We are providing the following information to aid you in your analysis of the financial aspects of the merger. We derived this information from the audited financial statements of Exxon for the years 1998, 1997 and 1996 and from the audited financial statements of Mobil for the years 1998, 1997 and 1996. The information is only a summary and you should read it in conjunction with our historical financial statements and related notes contained in the annual reports and other information that we have filed with the SEC and incorporated by reference. See "Where You Can Find More Information" on page VI-1.

The unaudited pro forma condensed combined statements of income for the years ended December 31, 1995, 1997 and 1996 assume the merger was effected on January 1, 1996. The unaudited pro forma condensed combined balance sheet gives effect to the merger as if it had occurred on December 31, 1998. The accounting policies of Exxon and Mobil are substantially comparable. Consequently, we did not make adjustments to the unaudited pro forma condensed combined financial statements to conform the accounting policies of the combining companies.

The unaudited pro forma combined financial information is for illustrative

purposes only. The companies may have performed differently had they always been combined. You should not rely on the pro forma combined financial information as being indicative of the historical results that would have been achieved had the companies always been combined or the future results that the combined company will experience after the merger.

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# UNAUDITED PRO FORMA CONDENSED COMBINED BALANCE SHEET AS OF DECEMBER 31, 1998

<TABLE>

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	niste		Pro Forma	Pro Forma
	Exxon(2)	Mobil(2)	Adjustments	Combined
	**********		*********	*****
«S»	<c></c>	(mill	ions of dollars)	<c></c>
Assets	<c></c>	*CS	ccs	442
Current assets				
Cash and cash equivalents	\$ 1,441	\$ 714	\$ 63 (6A)	\$ 2,218
Other marketable securities	20	17	182 (6A)	219
Notes and accounts receivable, less estimated doubtful			2000	
accounts	9,512	5,518	(1,000) (4)	16,259
Inventories			2,229 (6A)	10,233
Crude oil, products and merchandise	4,896	1,545	1,096 (6A)	7,537
Materials and supplies	709	366	81 (6A)	1,156
Prepaid taxes and expenses	1,015	571	50 (6A)	1,636
7774057 35055 550 7747555133551333513313131111111111111111	*******	*******	*******	*****
Total current assets	17,593	8,731	2,701	29,025
Investments and advances	6,434	8,490	(1,203) (6A)	13,721
Property, plant and equipment, at cost, less accumulated	40.000	20.540	2 160 1600	92.582
depreciation and depletion	65,199	24,727 806	2,656 (6A) 6 (6A)	4,216
Other assets, including intangibles, net	3,404	806	6 (6A)	4,240
Total assets	5 92,630	5 42,754	\$ 4,160	5 139,544
10101 000101111111111111111111111111111		* ***	********	
Liabilities				
Current liabilities				
Notes and loans payable	\$ 4,248	\$ 3,982	\$ 377 (6A)	\$ 8.607
Accounts payable and accrued liabilities	13,825	8,167	(1,000) (4)	
			90 (5)	23 251
460-1 1111 AMAG		797	2,269 (6A) 7 (6A)	23,351
Income taxes payable	1,339	797	, (00)	2,145
Total current liabilities	19,412	12.946	1.743	34,101
Long-term debt	4,530	3,719	283 (6A)	8,532
Annuity reserves and accrued liabilities	9,514	3,071	402 (6A)	12,987
Deferred income tax liabilities	13,142	3,254	354 (6A)	16,750
Deferred credits	475	1,021	22 (6A)	1,518
Equity of minority and preferred shareholders in affiliated	0.000	444	2 100 (03)	2 636
companies	1,807	373	1,446 (6A)	3,626
Total liabilities	48.880	24,384	4,250	77,514
Total Habilities	40,000	24,304	*******	
Shareholders' Equity				
Preferred stock	105	641		746
Benefit plan related balances	(125)	(668)	-0440-0530-	(793)
Common stock	2,323	898	(117) (6B)	3,104
Capital surplus	20 200	1,649	(1,649) (6B)	
Earnings reinvested	54,575	20,534	(90) (5) (1,860) (6B)	73.159
Accumulated other nonowner changes in equity			12/000/ 100/	
Cumulative foreign exchange translation adjustment	(641)	(932)		(1,573)
Minimum pension liability adjustment	(282)	(126)		(408)
Common stock held in treasury	(12,205)	(3,626)	3,626 (6B)	(12, 205)
		*******		********
Total shareholders' equity	43,750	18,370	(90)	62,030
maked dishilled and standard account to	\$ 92,630	\$ 42,754	\$ 4,160	\$ 139,544
Total liabilities and shareholders' equity	\$ 92,630	\$ 42,754	\$ 4,160	\$ 139,344

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Chapter One - The Merger

# UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENTS OF INCOME FOR YEAR ENDED DECEMBER 31, 1998

<TABLE>

CAPTIONS				
	Histo			
	********		Pro Forma	Pro Forma
	Exxon	Mobil(2)	Adjustments	Combined
		(millions	of dollars)	
CS>	«C>	<c></c>	<c></c>	<c></c>
Revenue				
Sales and other operating revenue, including				
excise taxes	\$ 115,417	\$ 51,893	\$ (10.300) (4)	A
			7,630 (68	
Earnings from equity interests and other revenue	2,355	1,638	(18) (62	
				********
Total revenue	117,772	53,531	(2,688)	168,615
			********	*******
Costs and other deductions				
Crude oil and product purchases	45.020	27,687	(10,300) (4)	
A Maria Maria and Artistantia			5,947 (67	
Operating expenses		5,222	852 (62	
Selling, general and administrative expenses		3,708	285 (6A	
Depreciation and depletion		2,831	170 (6)	
Exploration expenses, including dry holes		643	45 1554	1,506
Interest expense		451	14 (6A	
Excise taxes	14,720	5,853	279. 344	20,573
Other taxes and duties	22,576	4,029	342 (67	
Income applicable to minority and preferred interests.	185	47	34 (62	266
Total costs and other deductions		50,471	(2,656)	156.531
Total costs and other deductions,	108,716	30,4/1	(2,656)	130,331
Income before income taxes		3,060	(32)	12.084
Income taxes		1,356	(32) (6A	
		2,000	(50) (50)	
Income before cumulative effect of accounting change		1,704	O	8.144
Cumulative effect of accounting change		0		(70)
A STATE OF THE PROPERTY OF THE				******
Net income	\$ 6,370	\$ 1,704	\$ 0	\$ 8,074
	*********	*********	*****	
Net income per common share (dollars)				
Before cumulative effect of accounting change	\$ 2.64	\$ 2.12		\$ 2.33 (3)
Cumulative effect of accounting change	(0.03)	0.00		(0.02) (3)
	********	*******		******
Net income	\$ 2.61	\$ 2.12		\$ 2.31 (3)
	********	********		
Net income per common shareassuming dilution (dollars)				S - 100 T - 150
Before cumulative effect of accounting change		\$ 2.10		\$ 2.30 (3)
Cumulative effect of accounting change	(0.03)	0.00		(0.02) (3)
and the second s	*********	******		
Net income		\$ 2.10		\$ 2.28 (3)
		*********		********
Average number common shares outstanding				
(millions)	2.440	779		3,468 (3)
Average number common shares	2,440	113		3,465 (3)
outstandingassuming dilution (millions)	2,468	807		3,533 (3)
seedening appointed different furtitions/	2,408	607		21222 121
Dividends per common share (dollars)	\$ 1.640	5 2.280		\$ 1,666 (3)

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Chapter One - The Merger

# UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENTS OF INCOME FOR YEAR ENDED DECEMBER 31, 1997

<TABLE>

		Histo	ric						
	***************************************			Pro Forma		Pro Forma			
		Exxon		Mobil (2)		Adjustments		Combined	
	9	********	-	******	99	***********	-	• • • • • • • • • • • • • • • • • • • •	
			(millions of dollars						
:S>	<c></c>		<c></c>		<c></c>	<c></c>	<c></c>		
levenue									
Sales and other operating revenue, including									
excise taxes	\$	135,142	\$	64,028	\$	(13,600)(4)			
						9,585 (6A)	\$	195,155	
Earnings from equity interests and other									
revenue		2,100		1,878		(81) (6A)		3,897	
					***			*******	
Total revenue		137,242		65,906		(4,096)		199,052	
			***					*******	

Costs and other deductions						
Crude oil and product purchases	57,971	35,784	(13,600)	(4)		
	100.00		7,308	(6A)	87,463	,
Operating expenses	13,045	5,413	1,046	(6A)	19,504	i
Selling, general and administrative expenses	8,406	4,334	319	(6A)	13,055	,
Depreciation and depletion	5,474	2,554	178	(6A)	8,206	5
Exploration expenses, including dry holes	753	499			1,252	3
Interest expense	415	428	4	(6A)	847	7
Excise taxes	14,863	5,928			20,791	Č.
Other taxes and duties	23,111	4,578	390	(6A)	28,079	,
Income applicable to minority and preferred	23434					
interests	406	23	84	(6A)	513	
	*********					
Total costs and other deductions	124,444	59.541	(4,271)		179,714	
	********	*********	*********			
Income before income taxes	12,798	6,365	175		19,338	3
Income taxes	4,338	3,093	175	(6A)	7,606	
	*******	*********	*******		*********	
Net income	\$ 8,460	\$ 3,272	\$ 0		\$ 11,732	2
	*********	*********	*********		******	
Net income per common share (dollars)	\$ 3.41	\$ 4.10			\$ 3.32	(3)
Net income per common shareassuming		Althur Althur				
dilution (dollars)	\$ 3.37	\$ 4.01			\$ 3.28	(3)
Average number common shares outstanding						
(millions)	2,473	786			3,511	(3)
Average number common shares						
outstandingassuming dilution (millions)	2,505	815			3,583	(3)
Dividends per common share (dollars)	\$ 1.625	\$ 2.120			\$ 1.615	(3)

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Chapter One - The Merger

UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENTS OF INCOME FOR YEAR ENDED DECEMBER 31, 1996

<TABLE>

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	His	toric			
	********		Pro Forma	Pro Forma	
	Exxon	Mobil(2)	Adjustments	Combined	
			**********	*********	
		(millio	ns of dollars)		
<s></s>	«C>	<c></c>	<c> <c></c></c>	<c> <c></c></c>	
Revenue	-				
Sales and other operating revenue, including		-			
excise taxes	\$ 131,543	\$ 79,944	\$ (14,000)(4) 10,401 (6A)	\$ 207,888	
Earnings from equity interests and other			-3.7		
revenue	2,706	1,559	(42) (6A)	4,223	
		*******	*********		
Total revenue	134,249	81,503	(3,641)	212,111	
		********	********	93338333355	
Costs and other deductions					
Crude oil and product purchases	56,406	41.831	(14,000)(4)		
A DETECTION OF TAXABLE AND COMPANY OF THE PROPERTY OF THE PROP			8,022 (6A)	92,259	
Operating expenses	13,255	5,659	1,048 (6A)	19,962	
Selling, general and administrative expenses	7,961	5,157	465 (6A)	13,583	
Depreciation and depletion	5.329	2,725	187 (6A)	8,241	
Exploration expenses, including dry holes	763	512	234 4500	1,275	
Interest expense	464	455	6 (6A)	925	
Excise taxes	14,815	9,236	. 1,555	24,051	
Other taxes and duties.	22,956	9,787	470 (6A)	33,213	
Income applicable to minority and preferred	1000			1.00	
interests	384	30	46 (6A)	460	
		*******			
Total costs and other deductions	122,333	75,392	(3,756)	193,969	
	EDERDOCERE				
Income before income taxes	11,916	6,111	115	18,142	
Income taxes	4,406	3,147	115 (6A)	7,668	
and cancer in the state of the	*,400	31247	113 (04)	.,,,,,,	
Net income	\$ 7,510	\$ 2,964	\$ 0	\$ 10,474	
the Adometic Control of the Control	********	2,304	*********		
Net income per common share (dollars)	\$ 3.01	\$ 3.69		\$ 2.95 (3)	
Net income per common shareassuming	y 3.41	3.03		2.33 (3)	
dilution (dollars)	\$ 2.99	\$ 3.62		\$ 2.91 (3)	
Average number common shares outstanding					
(millions)	2,484	788		3,525 (3)	
Average number common shares	-4			0.000 101	
AND THE PERSON OF THE PERSON O					

 outstanding--assuming dilution (millions).......
 2,512
 816
 3,588 (3)

 Dividends per common share (dollars).......
 \$ 1,560 \$ 1,963
 \$ 1.538 (3)

See Accompanying Notes to Unaudited Pro Forma Condensed Combined Financial Statements

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Chapter One - The Merger

NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS

#### Note 1. Basis of Presentation

The unaudited pro forma condensed combined statements of income are based on the consolidated financial statements of Exxon and Mobil for the years ended December 31, 1998, 1997 and 1996. The unaudited pro forma condensed combined balance sheet is based on the consolidated financial statements of Exxon and Mobil at December 31, 1998.

Exxon and Mobil consolidated financial statements are prepared in conformity with generally accepted accounting principles and require Exxon and Mobil management to make estimates that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. In the opinion of Exxon and Mobil, the unaudited pro forma condensed combined financial statements include all adjustments necessary to present fairly the results of the periods presented. Actual results are not expected to differ materially from these estimates.

#### Note 2. Accounting Policies and Financial Statement Classifications

The accounting policies of Exxon and Mobil are substantially comparable. Consequently, we did not make adjustments to the unaudited pro forma condensed combined financial statements to conform the accounting policies of the combining companies.

Certain revenues, costs and other deductions in the consolidated statements of income for Mobil have been reclassified to conform to the line item presentation in the pro forma condensed combined statements of income. Certain assets and liabilities in the consolidated balance sheets for Exxon and Mobil have been reclassified to conform to the line item presentation in the pro forma condensed combined balance sheet.

#### Note 3. Pro Forma Earnings Per Share and Dividends Per Share

The pro forma combined net income per common share is based on net income less preferred stock dividends and the weighted average number of outstanding common shares. Net income per common share--assuming dilution includes the dilutive effect of incentive program stock options and convertible preferred stock. The weighted average number of outstanding common shares has been adjusted to reflect the exchange ratio of 1.32015 shares of Exxon Mobil common stock for each share of Mobil common stock.

The pro forma combined dividends per share reflect the sum of the dividends paid by Exxon and Mobil divided by the number of shares that would have been outstanding for the periods, after adjusting the Mobil shares for the exchange ratio of 1.32015 shares of Exxon Mobil common stock.

# Note 4. Intercompany Transactions

Intercompany sales and purchase transactions have been eliminated in the unaudited pro forms condensed combined statements of income. Intercompany amounts receivable and payable have been eliminated in the unaudited pro forms condensed combined balance sheet.

#### Note 5. Merger-Related and Integration-Related Expenses

Merger-related fees and expenses, consisting primarily of SEC filing fees, fees and expenses of investment bankers, attorneys and accountants, and financial printing and other related charges, are estimated to be approximately \$90 million. These fees and expenses have been reflected in the unaudited pro forma condensed combined balance sheet as of December 31, 1998. These charges are not reflected in the unaudited pro forma condensed combined statements of income or the pro forma combined per share data.

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Chapter One - The Merger

We estimate that costs of approximately \$2.0 billion (\$1.3 billion after-tax) will be incurred for severance and other integration-related

expenses, including the elimination of duplicate facilities and excess capacity, operational realignment and related workforce reductions. These expenditures are necessary to reduce costs and operate efficiently. The unaudited pro forma condensed combined financial statements reflect neither the impact of these charges nor the benefits from the expected synergies. The costs for severance and other integration-related expenses will be charged to operations in the periods the obligations occur.

#### Note 6. Other Pro Forma Adjustments

- (A) A pro forma adjustment has been made to consolidate the accounts of certain refining, marketing and chemicals operations that are jointly controlled by the combining companies and which were accounted for by Exxon and Mobil as separate companies using the equity method.
- (B) A pro forma adjustment has been made to reflect the cancellation of Mobil common stock accounted for as treasury stock and the assumed issuance of approximately 1.0 billion shares of Exxon Mobil common stock in exchange for all of the outstanding Mobil common stock (based on the exchange ratio of 1.32015). The actual number of shares of Exxon Mobil common stock to be issued in connection with the merger will be based on the number of shares of Mobil common stock issued and outstanding at the effective time.

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Chapter One - The Merger

#### OPINIONS OF FINANCIAL ADVISORS

We each retained our own financial advisor to assist us and our Boards in our consideration of valuation, financial and other matters relating to the merger. Exxon retained J.P. Morgan Securities Inc. as its financial advisor and Mobil retained Goldman, Sachs & Co. as its financial advisor.

Opinion of Exxon Financial Advisor

At the December 1, 1998 meeting of the Exxon Board, J.P. Morgan gave its opinion to the Exxon Board that, as of such date and based upon and subject to the various considerations set forth in its opinion, the consideration to be paid by Exxon in connection with the proposed merger was fair from a financial point of view to Exxon. J.P. Morgan has reaffirmed its December 1, 1998 opinion in its written opinion to the Exxon Board dated as of April 2, 1999.

The full text of the updated opinion of J.P. Morgan, which sets forth among other things the assumptions made, procedures followed, matters considered and limitations on the scope of the review undertaken by J.P. Morgan in rendering its opinion, is attached as Annex C and is incorporated by reference with the consent of J.P. Morgan. This opinion should be read carefully and in its entirety. J.P. Morgan's opinion is addressed to the Exxon Board, is directed only to the fairness of the consideration to be paid in the merger, does not address any other aspect of the merger and does not constitute a recommendation to any Exxon shareholder as to how to vote with respect to the merger. The summary of the opinion of J.P. Morgan set forth in this joint proxy statement/prospectus is qualified in its entirety by reference to the full text of such opinion.

In rendering its opinions, J.P. Morgan reviewed:

- o the merger agreement;
- o in the case of its updated opinion, this document;
- o certain publicly available information concerning the business of Mobil and of certain other companies engaged in businesses that J.P. Morgan deemed comparable to those of Mobil, and the reported market prices for the securities of certain other companies that J.P. Morgan deemed comparable;
- publicly available terms of certain transactions involving companies comparable to Mobil and the consideration received for such companies;
- current and historical market prices of the Exxon common stock and the Mobil common stock;
- o the audited financial statements of Exxon and Mobil for the fiscal year ended December 31, 1997, and the unaudited condensed financial statements of Exxon and Mobil for the period ended September 30, 1998;
- o in the case of its updated opinion, the audited financial statements of Exxon and Mobil for the fiscal year ended December 31, 1998;
- o certain presentations made by Exxon and Mobil in 1998 to equity analysts regarding the performance of their respective businesses;
- c certain internal financial analyses of potential synergies that may be realized from the merger prepared by Exxon and Mobil and their respective managements; and

o the terms of other business combinations that J.P. Morgan deemed relevant.

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In addition, J.P. Morgan participated in discussions with certain members of the management of Exxon and Mobil with respect to certain aspects of the merger, the past and current business operations of Exxon and Mobil, the financial condition and future prospects and operations of Exxon and Mobil, and certain other matters J.P. Morgan believed necessary or appropriate to its inquiry. J.P. Morgan reviewed such other financial studies and analyses and considered such other information as it deemed appropriate for the purposes of its opinion.

In giving its opinion, J.P. Morgan relied upon and assumed, without independent verification, the accuracy and completeness of all information that was publicly available or was furnished to it by Exxon and Mobil or otherwise reviewed by J.P. Morgan, and J.P. Morgan has not assumed any responsibility or liability therefor. J.P. Morgan has not conducted any evaluation or appraisal of any assets or liabilities, nor have any such valuations or appraisals been provided to J.P. Morgan. In relying on financial analyses provided to it of potential synergies that may be realized from the merger, J.P. Morgan has assumed that they have been reasonably prepared based on assumptions reflecting the best currently available estimates and judgments by management of Exxon as to such potential synergies. J.P. Morgan has also assumed that the merger will have the tax consequences and pooling of interests accounting treatment described in the merger agreement and this document, and that the transactions contemplated by the merger agreement will be consummated as described in the merger agreement and this document. J.P. Morgan relied as to all legal matters relevant to rendering its opinion upon the advice of counsel.

J.P. Morgan's opinion is necessarily based on economic, market and other conditions as in effect on, and the information made available to J.P. Morgan as of, the date of such opinion. Subsequent developments may affect its opinion, and J.P. Morgan does not have any obligation to update, or revise or reaffirm such opinion. J.P. Morgan expressed no opinion as to the price at which Exxon common stock will trade at any future time.

In accordance with customary investment banking practice, J.P. Morgan employed generally accepted valuation methods in reaching its opinion. The following is a summary of the material financial analyses utilized by J.P. Morgan in connection with providing its December 1, 1998 opinion. J.P. Morgan utilized substantially the same types of analyses in connection with providing its updated opinion.

The elements of J.P. Morgan's analyses included:

- assessing the potential value creation as a result of the merger (paragraphs 1-3);
- c assessing the sharing of the combined pro forma entity given the historical and forecast contributions of each company, and the sharing of the potential value creation (paragraphs 4-6);
- testing the results on pro-forma Exxon earnings per share for the potential accretion/dilution of earnings for the next 3 years (paragraph 7); and
- checking the premium to be paid by Exxon in the merger against market precedent (paragraph 8).
- 1. Comparable Return on Capital Employed. J.P. Morgan reviewed and analyzed the return on capital employed ("ROCE") of both Exxon and Mobil since 1993. J.P. Morgan observed that Exxon's ROCE has consistently been 2-3% above that of Mobil. J.P. Morgan's analysis indicated that if Mobil were to be merged with Exxon, the combined entity's capital productivity would eventually be higher than the pro forma capital productivity of Exxon and Mobil. J.P. Morgan indicated that it would be reasonable to assume that the benefits of this capital productivity increase would occur within three years of the closing of the merger. J.P. Morgan pointed out, however, that its views in this respect were based on discussions with senior management at Exxon and that there could be no assurance that this increase in capital productivity would be realized.
- 2. Comparable P/E Analysis. J.P. Morgan performed an analysis comparing Exxon's price to earnings multiples with Mobil's price to earnings multiples for the past five years. The source for these price to earnings multiples was the one and two year prospective price to earnings multiple estimates by I/B/E/S International Inc. and First Call, organizations which compile brokers' earnings estimates on public companies. Such analysis

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indicated that Mobil has been trading in the recent past at an 8% to 15% discount to Exxon. J.P. Morgan's analysis indicated that if Mobil were to be valued at price to earnings multiples comparable to those of Exxon, there would be an enhancement of value to its shareholders of approximately \$11 billion. Finally, this analysis suggested that the combined company might enjoy an overall increase in its price to earnings multiple due to the potential for improved capital productivity and the expected strategic benefits of the merger. According to J.P. Morgan's analysis, a price to earnings multiple increase of 1 for Exxon Mobil would result in an enhancement of value to shareholders of approximately \$10 billion. Morgan pointed out, however, that there could be no assurance that these values would be realized.

- 3. Annual Pre-Tax Synergies. J.P. Morgan reviewed and analyzed the future synergies expected to result from the merger, estimated by management at \$2.8 billion annually on a pre-tax basis. J.P. Morgan also analyzed stock-for-stock merger transactions over the past three years where the market capitalization of the smaller entity pre-announcement was greater than \$5 billion. The analysis indicated that for industrially logical mergers, the market granted a post-announcement value pick-up to the companies of 6-9 times the anticipated synergy benefits identified by management on a pre-tax basis. In cases where management also had a good track record of cost cutting, J.P. Morgan indicated that the market might be expected to capitalize synergies at a multiple of 8-9 times on a pre-tax basis. Based on the estimated synergies of \$2.8 billion expected to result from the merger, this suggested a potential value creation in the short term of approximately \$22-25 billion.
- J.P. Morgan also indicated that the value of the potential synergies for the combined company could be greater in the long term if management achieved its stated objectives and the expected synergies were demonstrated to the market. On this basis, J.P. Morgan estimated that as much as \$11 billion in value could be created in excess of the short term impact, in addition to the potential enhancement of value described in paragraph 2 above.

In addition to expressing no opinion as to the potential future trading price of the Exxon common stock, J.P. Morgan also pointed out that there could be no assurance that either these short-term or long-term values would be

- 4. Sharing of Future Benefits of the Merger. J.P. Morgan reviewed the elements of potential value creation, which were:
  - immediate value pick-up based on estimated pre-tax synergies, and
  - additional long-term value pick-up that could result from the possible
    - o realization of anticipated synergies,
    - o price to earnings multiple re-rating for Mobil, and
    - o price to earnings multiple re-rating for the combined company.
- J.P. Morgan's review suggested that over the long term, the potential for value creation from these elements could be as much as \$47-57 billion. Since Exxon's market capitalization is significantly larger than Mobil's, Exxon's shareholders would enjoy a greater proportion of the value creation if no premium were paid by Exxon in the merger. By offering a premium to Mobil's shareholders, this potential value creation was instead shared in approximately equal proportions between the companies' shareholders and such sharing was deemed to be a reasonable allocation of value creation.

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5. Historical Contribution Analysis, J.P. Morgan reviewed and analyzed the relative historical contribution of both Exxon and Mobil to the combined pro forma entity.

The following table illustrates the historical relative market capitalization contribution by Exxon to a combined Exxon Mobil entity:

At closing on November 20, 1998	74.75
Average for the one month prior to November 20, 1998	74.9%
Average for the three months prior to November 20, 1998	74.34
Average for the six months prior to November 20, 1996	74.48
Average for the twelve months prior to November 20, 1998	73.8%

The source for the table above was Datastream, an organization which compiles share prices for public companies.

The following table illustrates the historical relative contribution by Exxon to a combined Exxon Mobil entity for the different financial and physical performance measures that were reviewed:

<TABLE> <CAPTION>

9 months to 1992 1995 1996 1997 Sep 30, 1998 1993

<s> Firm value Total revenues</s>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>	<c> 71.3% 67.6%</c>	<c> 73,0% 68.7%</c>
After tax earnings before change in accounting principles	78.6%	71.78	74.45	73.1%	71.71	72.15	72.64
Pre-tax earnings before interest and pre-extraordinary items Earnings before interest, tax,	70.5%	67.3%	67.9%	69.61	66.0%	66.7%	68.4%
depreciation and amortization pre-extraordinary items	68.1%	66.5%	65.63	65.9%	66.1%	67.1%	68.6%
Dividends distributed	73.4%	73.4%	72.8%	72.25	71.5%	70.5%	69.21
After tax operating cash flow	59.6%	69.11	68.1%	68.3%	68.5%	69.13	71.5%
Capital employed	65.3%	65.25	66.8%	67.1%	66.4%	67.2%	66.3%
Pre tax earnings before interest, depreciation and amortization and exploration expense pre-	20.00		33,37	31,101	444.0	40,000	
extraordinary items						66.8%	
Net fixed assets						73.0%	
Oil and gas reserves						66.6%	
Refinery capacity						65.7%	
Marketing sales						61.9%	
Production						61.2%	
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  |  |  |  |  | 63.1% |  |

- J.P. Morgan observed that the relative contribution by Exxon to a combined Exxon Mobil entity in the most recent full year of Exxon would have been between 61% and 73% depending on the measure used. J.P. Morgan compared this range of relative contribution with the approximately 70% continuing ownership stake that Exxon's shareholders would have in the combined company following the merger. Sources for the historical financial information used in connection with the ratios were Exxon's and Mobil's annual reports for the years 1992-1997, inclusive, and first nine months results of 1998 as announced by both companies.
- 6. Forecast Contribution Analysis. J.P. Morgan reviewed and analyzed the then most current First Call earnings and after-tax operating cash flow forecasts for 1998, 1999 and 2000. J.P. Morgan observed that Exxon was forecast to contribute between 70% and 73% of the future earnings and cash flow of a combined Exxon Mobil.

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- entity. J.P. Morgan compared this range of forecasted contribution with the approximately 70% continuing ownership stake that Exxon's shareholders would have in the combined company following the merger.
- 7. Exxon Pro Forma Merger Analysis, J.P. Morgan analyzed the then-current pro forma Exxon earnings per share forecasts for 1999, 2000 and 2001 based on First Call estimates. The analysis showed, assuming \$2.8 billion in synergies phased in over three years, on an equivalent share basis, that the merger would be accretive from 1999 to Exxon's shareholders, excluding non-recurring integration-related costs.
- 8. Analysis of Selected Comparable Transactions. J.P. Morgan reviewed 38 recently announced or closed large capitalization stock-for-stock transactions. J.P. Morgan then compared the implied premiums resulting from the smaller company's share of the pro forma combined company resulting from the transaction as compared with the smaller company's market capitalization relative to the combined market capitalization of the companies prior to announcement of the transaction.
- J.P. Morgan's analysis showed that for transactions involving smaller companies with a relative market capitalization comparable to that of Mobil pre-announcement, a premium of 15% to 25% matched market precedent. The analysis indicated that, based on the closing share prices on November 30, 1998, the day prior to announcement of the merger, the implied premium paid to Mobil shareholders would be approximately 10%. The analysis also indicated that, based on closing share prices on November 24, 1998, two trading days before Exxon and Mobil issued a joint press release confirming that they were in discussions concerning a possible merger, the implied premium paid to Mobil shareholders would be approximately 20%.

The summary set forth above is not a complete description of the analyses or data presented by J.P. Morgan. The preparation of a fairness opinion is a complex process and is not necessarily susceptible to partial analysis or summary description. In arriving at its opinion, J.P. Morgan considered the results of all of its analyses as a whole and did not attribute any particular weight to any analysis or factor considered by it. Furthermore, J.P. Morgan believes that selecting any portion of its analyses, without considering all analyses, would create an incomplete view of the process underlying its opinion. In addition, J.P. Morgan may have given various analyses and factors more or less weight than other analyses and factors, and may have deemed various assumptions more or less probable than other assumptions, so that the ranges of valuation resulting from any particular analysis described should not be taken as J.P. Morgan's view of the actual value of Exxon or Mobil. In performing its analyses, J.P. Morgan made numerous assumptions with respect to industry performance, general business and economic conditions and other matters, many of

which are beyond the control of Exxon and Mobil. Any estimates contained in J.F. Morgan's analyses are not necessarily indicative of future results or actual values, which may be significantly more or less favorable than those suggested by such estimates.

As a part of its investment banking business, J.P. Morgan and its affiliates are continually engaged in the valuation of businesses and their securities in connection with mergers and acquisitions, investments for passive and control purposes, negotiated underwritings, secondary distributions of listed and unlisted securities, private placements, and valuations for estate, corporate and other purposes. J.P. Morgan was selected to advise Exxon and to deliver a fairness opinion with respect to the merger on the basis of such experience and its familiarity with Exxon.

Pursuant to a letter agreement dated November 9, 1998, Exxon engaged J.P. Morgan as its exclusive financial advisor in connection with the merger. Pursuant to the terms of the J.P. Morgan engagement letter, Exxon has agreed to pay J.P. Morgan a fee equal to (i) \$100,000 per month and (ii) \$8,000,000 payable upon the consummation of the merger or acquisition of a majority of the common stock or assets of Mobil by Exxon, with up to \$2,400,000 of the fees paid pursuant to clause (i) above to be creditable to any fees that become payable pursuant to clause (ii) above. In addition, Exxon has agreed to reimburse J.P. Morgan for its reasonable expenses incurred in connection with its services, including the fees and disbursements of counsel, and will indemnify J.P. Morgan against certain liabilities arising out of J.P. Morgan's engagement, including liabilities under the federal securities laws. The SEC has taken the position that such indemnification under the federal securities laws may not be enforceable if it is found to be against public policy.

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J.P. Morgan has in the past provided financial advisory services to a subsidiary of Exxon, and in the past has provided financial advisory and other services to Mobil. In addition, Mr. Raymond has been a member of J.P. Morgan's board of directors since 1987. As a result, a potential conflict of interest could be deemed to exist. The Exxon Board did not consider this potential conflict to be significant either to the selection of J.P. Morgan as financial advisor or to relying on J.P. Morgan's opinion. In the ordinary course of their businesses, J.P. Morgan and its affiliates may actively trade the debt and equity securities of Exxon or Mobil for their own account or for the accounts of customers and, accordingly, they may at any time hold long or short positions in such securities.

Opinion of Mobil Financial Advisor

On December 1, 1998, Goldman Sachs delivered its written opinion to the Mobil Board that, as of the date of such opinion, the exchange ratio pursuant to the merger agreement was fair from a financial point of view to the holders of Mobil common stock. Goldman Sachs reconfirmed its December 1, 1998 opinion by delivery of its written opinion dated as of April 2, 1999.

The full text of the written opinion of Goldman Sachs, dated April 2, 1999, which sets forth assumptions made, matters considered and limitations on the review undertaken in connection with the opinion is attached as Annex D and is incorporated by reference. Mobil shareholders are urged to, and should, read such opinion in its entirety.

In connection with its opinion, Goldman Sachs reviewed, among other things:

- o the merger agreement:
- o the stock option agreement;
- o Annual Reports to Stockholders and Annual Reports on Form 10-K of Mobil and Exxon for the five years ended December 31, 1997 and, in the case of its reconfirmed opinion, the Annual Reports on Form 10-K of Mobil and Exxon for the year ended December 31, 1998 and this document;
- certain interim reports to shareholders and Quarterly Reports on Form 10-Q of Mobil and Exxon;
- c certain other communications from Mobil and Exxon to their respective shareholders;
- o certain internal financial analyses and forecasts for Mobil prepared by its management, and
- o certain cost savings and operating synergies projected by the managements of Mobil and Exxon to result from the merger.

Goldman Sachs also held discussions with members of the senior management of Mobil regarding the strategic rationale for, and the potential benefits of, the merger and Mobil's past and current business operations, financial condition and future prospects. Goldman Sachs reviewed forecasts regarding selected measures of future operating and financial performance of Exxon in summary form prepared by management of Mobil based on its discussions with management of

Exxon. Internal financial analyses and forecasts prepared by Exxon were not otherwise made available for review by Goldman Sachs. In addition, Goldman Sachs.

- reviewed the reported price and trading activity for Mobil common stock and Exxon common stock;
- o compared certain financial and stock market information for Mobil and Exxon with similar information for certain other companies the securities of which are publicly traded;
- o reviewed the financial terms of certain recent business combinations;

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 performed such other studies and analyses as it considered appropriate.

Goldman Sachs relied upon the accuracy and completeness of all of the financial and other information reviewed by it and assumed such accuracy and completeness for purposes of rendering its opinion. In that regard, Goldman Sachs assumed, with the consent of the Mobil Board, that the synergies were reasonably prepared on a basis reflecting the best available estimates and judgments of Mobil and Exxon as of the date of its opinion. Goldman Sachs also assumed, with the consent of the Mobil Board, that the merger will be accounted for as a pooling of interests under generally accepted accounting principles. Goldman Sachs also has assumed that all material governmental, regulatory or other consents and approvals necessary for the completion of the merger will be obtained without any meaningful adverse effect on Mobil or Exxon. In addition, Goldman Sachs did not make an independent evaluation or appraisal of the assets and liabilities of Mobil or Exxon or any of their subsidiaries and Goldman Sachs was not furnished with any such evaluation or appraisal. The opinion of Goldman Sachs was provided for the information and assistance of the Mobil Board in connection with its consideration of the merger and is not a recommendation as to how any holder of shares of Mobil common stock should vote.

The following is a summary of the material financial analyses used by Goldman Sachs in connection with providing its written opinion to the Mobil Board on December 1, 1998. Goldman Sachs utilized substantially the same types of financial analyses in connection with providing its opinion dated April 2, 1999.

1. Historical Stock Trading Analysis. Goldman Sachs reviewed the average historical trading prices for the shares of Mobil common stock. In addition, Goldman Sachs analysed the consideration to be received by holders of Mobil common stock pursuant to the merger agreement in relation to the average per share closing price of Mobil common stock for the one week, one month, three month, six month, one year, three year, five year and ten year periods ended November 24, 1998 and in relation to the closing price of Mobil common stock on November 24, 1998 and November 30, 1998. November 24, 1998 was chosen as a reference date because it was the last trading day prior to public reports that Mobil and Exxon were discussing a potential business combination transaction.

This analysis was based on the exchange ratio of 1.32015 and the per share price of Exxon common stock of \$75.00 on November 30, 1998, the last trading day prior to the announcement of the execution of the merger agreement. The analysis indicated that the consideration per share of Mobil common stock to be received by holders of Mobil common stock pursuant to the merger agreement:

- in relation to the average closing price for the one week, one month, three month, six month and one year periods ending November 24, 1998, represented a premium of 33,4%, 33.6%, 31.5%, 32.5% and 33.4%, respectively;
- o in relation to the closing price of Mobil common stock on November 24, 1998 and November 30, 1998, represented a premium of 32.1% and 15.1%, respectively, and
- o in relation to the closing price of Mobil common stock on May 1, 1998, the date of Mobil's all time high closing stock price prior to November 25, 1998, represented a premium of 19.9%.
- 2. Exchange Ratio Analysis. Goldman Sachs calculated the average of the historical daily exchange ratios of Exxon common stock to Mobil common stock based on the closing prices of Exxon common stock and Mobil common stock for the one week, one month, three month, six month and one year periods ended November 24, 1998. Such analysis indicated:
  - that the average exchange ratios over such periods were 1.041, 1.035, 1.064, 1.059 and 1.096, respectively, compared to the exchange ratio of 1.32015 pursuant to the merger agreement;
  - o that the average exchange ratio since the closing price of Mobil common stock on May 1, 1998, the date of Mobil's all time high closing price prior to November 25, 1998, was 1.092; and

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- o an exchange ratio of 1.147 for the closing price of Exxon common stock to Mobil common stock on November 30, 1998, as compared to the exchange ratio of 1.32015 pursuant to the merger agreement.
- 3. Contribution Analysis. Goldman Sachs reviewed certain historical and estimated future operating and financial information, including, among other things, equity market value, levered value, total assets, shareholders' equity, earnings before interest, taxes, depreciation and amortization ("EBITDA"), net income and discretionary cash flow for Exxon, Mobil and the pro forma combined company resulting from the merger. Levered value is market value of equity plus book value of debt less cash. Discretionary cash flow is net income plus depreciation, depletion, amortization, deferred taxes and exploration expenses. This analysis indicated that, excluding shares of Mobil common stock held in trust pursuant to the Trust Agreement, dated June 29, 1992, as amended, between Mobil and Bankers Trust (Delaware), holders of Mobil common stock would receive 30% of the outstanding common equity of the pro forma combined company after the merger based on the exchange ratio of 1.32015 and contribute 25%, 26%, 31% and 34% of the equity market value, levered value, total assets and 1997 EBITDA of the pro forma combined company, respectively.

Goldman Sachs also analyzed the relative income statement contribution of Mobil and Exxon to the pro forma combined company resulting from the merger, before taking into account any of the possible benefits that may be realized following the merger, for 1997 and estimated years 1998, 1999 and 2000, based on I/8/E/S International Inc. estimates of earnings and cash flows.

The results of these analyses are as follows:

<TABLE

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	1, 10	Contributi	on of Mob	11
	to the	Pro Forma	Combined	Company
	******	********		
	1997	1998E	19992	2000E
	****	*****	44444	
<\$>	<c></c>	<c></c>	<c></c>	<c></c>
Net Income	29%	27%	29%	30%
Discretionary Cash Flow	32%	29%	31%	33%

  |  |  |  |

- 4. Selected Companies Analysis. Goldman Sachs reviewed and compared certain financial information, ratios and public market multiples relating to Mobil to corresponding financial information, ratios and public market multiples for the following six publicly traded companies:
  - o British Petroleum Company plc,
  - o Chevron Corporation,
  - o Exxon,
  - o Royal Dutch Petroleum Company,
  - o Shell Transport & Trading Co. plc, and
  - o Texaco Inc.

The selected companies were chosen because they are publicly traded companies that for purposes of analysis may be considered similar to Mobil.

Goldman Sachs calculated and compared various financial multiples and ratios. The multiples of Mobil were calculated using a price of \$74.94 per share, the closing price of Mobil common stock on November 24, 1998, the last trading day prior to public reports that Mobil and Exxon were discussing a potential business combination. The multiples and ratios for Mobil and for each of the selected companies were based on the most recent publicly available information.

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19.3x - 23.8x

The results of these analyses are as follows:

Price/earnings ratio.....

1998E 1999E <C> <C> 25,0x 20.1x

Mobil

26.4x - 29.6x

The review also indicated that the dividend yield of the selected companies ranged from 2.22% to 3.12%, compared to 3.04% for Mobil.

- 5. Pro Forma Merger Analysis. Goldman Sachs prepared a pro forma analysis of the financial impact of the merger. Using I/B/E/S International Inc. earnings estimates for 1999 and 2000, Goldman Sachs compared the earnings per share of Mobil common stock on a stand-alone basis and Exxon common stock on a stand-alone basis, to the earnings per share of the common stock of the pro forma combined company. Goldman Sachs performed this analysis based on the exchange ratio of 1.32015 and under three scenarios reflecting cost savings and operating synergies projected by the management of Mobil and Exxon to result from the merger:
  - o Scenario I assuming no synergies;
  - Scenario II assuming \$950 million in pre-tax synergies are realized in 1999 and \$1,820 million in pre-tax synergies are realized in 2000; and
  - Scenario III assuming \$2,800 million in pre-tax synergies are realized in each of 1999 and 2000.

This analysis indicated that:

- o assuming Scenario I, the merger would be dilutive that is, would represent a reduction to both 1999 and 2000 earnings per share of Exxon common stock on a stand-alone basis and would be accretive-that is, would represent an addition to 1999 and 2000 earnings per share of Mobil common stock on a stand-alone basis; and
- o assuming Scenario II or Scenario III, the merger would be accretive in 1999 and 2000 to the earnings per Share of Exxon common stock on a stand-alone basis and the earnings per share of Mobil common stock on a stand-alone basis.
- 6. Selected Transactions Analysis. Goldman Sachs analyzed certain information relating to the proposed transaction in relation to certain publicly available information for 28 stock-for-stock transactions, substantially all of which were in excess of \$10 billion. Such analysis indicated that for the selected transactions the premiums paid in such transactions as compared to:
  - o the target's price one day prior to the announcement of the transaction, ranged from a low of (5.8)% to a high of 58.8%, with a median of 12.1% and a mean of 17.0%, as compared to 15.1% for the proposed merger;
  - o the target's price one day prior to the date of any disclosure of the possible transaction (the "Disclosure Date"), ranged from a low of (5.2%) to a high of 70.5%, with a median of 20.7% and a mean of 24.1%, as compared to 32.1% for the proposed transaction;
  - c the target's 30-day average price prior to the Disclosure Date, ranged from a low of (1.8)% to a high of 76.0%, with a median of 18.6% and a mean of 28.1%, as compared to 33.6% for the proposed transaction:

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- o the target's 90-day average price prior to the Disclosure Date, ranged from a low of (6.8)% to a high of 82.8%, with a median of 21.9% and a mean of 28.7%, as compared to 31.5% for the proposed transaction, and
- o the average of the daily exchange ratios for the 90-day period prior to the Disclosure Date, ranged from a low of (8.8)% to a high of 53.6%, with a median of 16.9% and a mean of 18.6%, as compared to 24.1% for the proposed transaction.

The analysis further indicated that for the selected transactions, the premium resulting from the target's share of the pro forms company resulting from the transaction as compared with the target's market capitalization relative to the combined market capitalization of the target and the acquirer one day prior to the Disclosure Date ranged from a low of (4.4)% to a high of 45.0%, with a median of 9.0% and a mean of 13.0%, as compared to 22.4% for the proposed transaction.

The preparation of a fairness opinion is a complex process and is not necessarily susceptible to partial analysis or summary description. Selecting portions of the analyses or of the summary set forth above, without considering the analyses as a whole, could create an incomplete view of the processes underlying Goldman Sachs' opinion. In arriving at its fairness determination, Goldman Sachs considered the results of all such analyses. No company or transaction used in the above analyses as a comparison is directly comparable to Mobil or Exxon or the contemplated transaction.

The analyses were prepared solely for purposes of Goldman Sachs' providing its opinion to the Mobil Board as to the fairness from a financial point of view of the exchange ratio to the holders, other than Exxon or any of its subsidiaries or affiliates, of the outstanding shares of Mobil common stock and do not purport to be appraisals or necessarily reflect the prices at which businesses or securifies actually may be sold. Analyses based upon forecasts of future results are not necessarily indicative of actual future results, which may be significantly more or less favorable than suggested by such analyses. Because such analyses are inherently subject to uncertainty, being based upon numerous factors or events beyond the control of the parties or their respective advisors, none of Mobil, Exxon, Goldman Sachs nor any other person assumes responsibility if future results are materially different from those forecast.

As described above, Goldman Sachs' opinion to the Mobil Board was one of many factors taken into consideration by the Mobil Board in making its determination to approve the merger agreement. The foregoing summary does not purport to be a complete description of the analysis performed by Goldman Sachs in connection with such opinion and is qualified by reference to the written opinion of Goldman Sachs set forth in Annex D.

Goldman Sachs, as part of its investment banking business, is continually engaged in the valuation of businesses and their securities in connection with mergers and acquisitions, negotiated underwritings, competitive biddings, secondary distributions of listed and unlisted securities, private placements and valuations for estate, corporate and other purposes. Mobil selected Goldman Sachs to render its opinion because it is a nationally recognized investment banking firm that has substantial experience in transactions similar to the merger. Goldman Sachs is familiar with Mobil having provided certain investment banking services to Mobil from time to time, including having acted as dealer on Mobil's commercial paper program; having acted as agent on Mobil's stock repurchase program and medium term note program; and having acted as lead-managing underwriter of a public offering of Mobil Corporation Pass Through Certificates, Series 1997-A in May 1997. Goldman Sachs also has provided certain investment banking services to Exxon from time to time, and may provide investment banking services to Exxon in the future.

Soldman Sachs provides a full range of financial advisory and securities services and, in the course of its normal trading activities, may from time to time effect transactions and hold securities, including derivative securities, of Mobil or Exxon for its own account and for the accounts of customers.

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Pursuant to a letter agreement dated November 22, 1998, Mobil engaged Goldman Sachs to render its opinion in connection with the merger. Pursuant to the terms of the Goldman Sachs engagement letter, Mobil has agreed to pay Goldman Sachs a fee equal to (i) \$100,000 per month beginning on November 30, 1998 and (ii) \$8,000,000 payable upon the consummation of the merger or acquisition of a majority of the common stock or assets of Mobil by Exxon, with up to \$2,400,000 of the fees paid pursuant to clause (i) above to be creditable to any fees that become payable pursuant to clause (ii) above. From time to time, Goldman Sachs has also provided other financial advisory services to Mobil. Payment for certain of these services would be accelerated if the merger is consummated. Mobil has also agreed to reimburse Goldman Sachs for its reasonable out-of-pocket expenses, including attorney's fees, and to indemnify Goldman Sachs against certain liabilities, including certain liabilities under the federal securities laws. The SEC has taken the position that such indemnification under the federal securities laws may not be enforceable if it is found to be against public policy.

#### INTERESTS OF CERTAIN PERSONS IN THE MERGER

In considering the recommendation of the Mobil Board with respect to the merger agreement, shareholders should be aware that certain members of the management of Mobil and the Mobil Board have interests in the merger that may be different from, or in addition to, the interests of the other shareholders of Mobil generally.

#### Board of Directors

Exxon has agreed that, as of the closing, it will cause Mr. Note and Mr. Renna and four other persons who immediately prior to the closing were directors but not employees of Nobil, to be elected to the Exxon Mobil Board. See "The Merger Agreement--Exxon Mobil Board and Related Matters" on page I-55. It is expected that Donald V. Fites, Charles A. Heimbold, Jr., Helene L. Kaplan and J. Richard Munro will be the non-employee directors of Mobil who will be elected to the Exxon Mobil Board as of the closing, For information about the benefits received by Exxon directors, see "Chapter Four--Board of Directors Proposal: Election of Directors--Director Compensation" on page IV-6.

Indemnification; Directors' and Officers' Insurance

For seven years after the closing, Exxon has agreed to indemnify, to the extent provided under Mobil's charter and by-laws in effect on December 1, 1998, the individuals who on or before the closing were officers, directors and

employees of Mobil or its subsidiaries with respect to all acts or omissions before the closing by these individuals in these capacities. Exxon has further agreed to cause Mobil to honor all its indemnification agreements, including under Mobil's by-laws, in effect on December 1, 1998. Exxon has also agreed to provide, for seven years after the closing, directors' and officers' liability insurance in respect of acts or omissions occurring before the closing covering each person currently covered by Mobil's directors' and officers' liability insurance policy. Exxon can discharge this obligation by providing an insurance policy underwritten by a wholly-owned subsidiary of Exxon. See "The Merger Agreement--Certain Covenants--Indemnification and Insurance of Mobil Directors and Officers" on page I-57.

Employee Severance Plan

On September 25, 1998, upon the recommendation of the Management Compensation and Organization Committee of the Mobil Board (the "MCOC"), the Mobil Board revoked Mobil's prior severance arrangements in the event of a change in control of Mobil and adopted a cash-based employee severance plan. Generally, all Mobil employees on the U.S. payroll who work a regular schedule of at least 20 hours per week are eligible to participate in the severance plan. However, temporary employees, employees represented by a collective bargaining agent or subject to a collective bargaining agreement, leased employees, employees of Mobil-owned and operated service stations and any person retained pursuant to a written contract are not eligible to participate in the severance plan.

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Tier 1 employees comprising 19 senior executives, including Messrs. Noto, Renna, Thomas C. DeLoach, Jr., Harold R. Cramer and Stephen D. Pryor and all other executive officers of Mobil, as well as approximately 112 Tier 2 employees, approximately 1,329 Tier 3 employees and approximately 10,801 Tier 4 employees are eligible to receive severance benefits in the event of a qualifying termination of their employment on or within two years following a change in control, as such term is defined in the severance plan. In the following discussion, we refer collectively to the employees listed in the previous sentence as the covered employees and to Messrs. Noto, Renna, DeLoach, Cramer and Pryor collectively as the Mobil named executive officers. A qualifying termination of employment under the severance plan means (1) a termination by the employer other than for "cause" (as defined in the severance plan) or (2) a termination by the covered employee for "good reason" (as defined in the severance plan). A termination by the covered employee for good reason under the severance plan, in respect of a Tier 1, Tier 2 or Tier 3 employee means:

- a reduction in the covered employee's base salary or incentive compensation opportunity in effect immediately prior to the change in control,
- o the assignment to the covered employee of duties that in the aggregate are inconsistent with the covered employee's level of responsibility immediately before the change in control or any decline in the nature or status of the covered employee's responsibilities from those in effect immediately before the change in control and including, in the case of a Tier 1 or Tier 2 employee who was, immediately before the change in control, an executive officer, that employee ceasing to be an executive officer of a public company, or
- o the relocation of the covered employee's principal place of employment to a location more than 50 miles from that employee's principal place of employment immediately before the change in control.

A covered Tier 1, Tier 2 or Tier 3 employee who incurs a qualifying termination of employment will be entitled to receive a cash lump sum severance payment equal to:

- o the sum of his or her annual base salary, plus the highest annual bonus received in the three years immediately before the change in control, plus the value of contributions or allocations made, as applicable, by Mobil on that employee's behalf to the employees savings plan of Mobil Oil Corporation and the supplemental savings benefit plan of Mobil Oil Corporation in the calendar year before the change in control,
- o multiplied by 3 for Tier 1 employees, 2.5 for Tier 2 employees and 2.0 for Tier 3 employees.

A Tier 1, Tier 2 or Tier 3 employee who incurs a qualifying termination of employment will also be provided with welfare benefits as if that employee had continued to be employed by Mobil until the earlier to occur of:

- o two years from the date of the qualifying termination of employment and
- o that employee obtaining employment providing substantially similar

welfare benefits.

Under the severance plan. Mobil is required, if necessary, to make an additional gross-up payment to any covered employee to offset fully the effect of any excise tax imposed by Section 4999 of the Internal Revenue Code on any excess parachute payment, whether made to that employee under the severance plan or otherwise. In general, Section 4999 imposes an excise tax on the recipient of any excess parachute payment equal to 20% of that payment. A parachute payment is any payment that is contingent on a change in control. Excess parachute payments consist of the excess of parachute payments over an individual's average taxable compensation received by him from the employer during the five taxable years preceding the year in which the change in control occurs. If the individual has been employed for fewer than five taxable years, the individual's entire period of employment will be used to calculate the excess parachute payment.

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The merger will constitute a change in control under the severance plan. If the closing had occurred on March 1, 1999 and if each of Messrs, Noto, Renna, DeLoach, Cramer and Pryor had incurred a qualifying termination of employment immediately following that date, the approximate amount of the cash severance payment payable to each of the named executive officers would have been \$7,850,424 to Mr. Noto; \$5,213,610 to Mr. Renna; \$2,259,290 to Mr. DeLoach; \$2,352,000 to Mr. Cramer; and \$2,342,190 to Mr. Pryor and the gross-up payment payable would not be expected to exceed \$5,712,767 to Mr. Noto; \$3,413,624 to Mr. Renna; \$2,256,999 to Mr. DeLoach; \$1,823,450 to Mr. Cramer; and \$1,802,655 to Mr. Pryor.

Incentive Compensation and Stock Ownership Plans

At the effective time, each outstanding option granted by Mobil to purchase shares of Mobil common stock will be assumed by Exxon Mobil and will, after the effective time, constitute an option to acquire, on the same terms and conditions as applied to the Mobil stock option prior to the effective time, the number, rounded down to the nearest whole number, of shares of Exxon Mobil common stock determined by multiplying:

- the number of shares of Mobil common stock subject to the option immediately before the effective time by
- o the exchange ratio.

The exercise price of each of these options will be a price per share of Exxon Mobil common stock, rounded up to the nearest cent, equal to:

- o the per share exercise price for Mobil common stock that otherwise could have been purchased under the Mobil stock option divided by
- o the exchange ratio.

Under the merger agreement, each other stock-based award granted by Mobil under its employee or director plans or arrangements maintained as of December 1, 1998 will be converted, as of the effective time, into a similar Exxon Mobil stock-based award, adjusted as appropriate to preserve the award's inherent value.

The other terms and conditions of these other stock-based awards, and the plans or agreements under which they were issued, will continue to apply in accordance with their terms and conditions as these terms and conditions have been interpreted and applied by Mobil in accordance with its past practice.

Upon a change in control, with respect to long-term conditional performance shares previously granted to Mobil employees under Mobil's 1995 incentive compensation and stock ownership plan and predecessor and successor plans, Exxon Mobil will assume that all long-term incentive award performance factors have been achieved at a 100% level. With respect to each employee and former employee who has been granted performance shares relating to performance cycles in which the change in control occurs, Exxon Mobil will calculate a prorated number of the performance shares originally granted with respect to each performance cycle. This number will be prorated for the number of months completed in each performance cycle, to the date of the change in control. Exxon Mobil will also calculate all notional dividends accrued to the date of the change in control relating to all performance shares originally granted with respect to each performance cycle. Similarly, Exxon Mobil will calculate any notional dividends which are or may be accrued from the date of the change in control relating to performance shares and notional dividends calculated as provided above. Unless the employee, including a Mobil named executive officer, before the end of the applicable performance cycle, is terminated for cause, engages in willful misconduct, or voluntarily terminates his or her employment to join a competitor, Exxon Mobil will pay the employee a cash amount in respect of the performance shares and notional dividends calculated as provided above in respect of the performance cycle at the same time and in the same manner as would have been the case in the absence of a change in control. The merger will constitute a change in control under the incentive plans.

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In addition, upon a change in control, current and former Mobil employees, including the Mobil named executive officers, who are eligible to receive annual short-term incentive cash awards granted under incentive plans with respect to a year in which a change in control occurs will receive an immediate payment of that award for the year in which the change in control occurs, prorated for the number of months completed in the year before the date of the change in control. The award will be calculated by using the most current year information available with respect to the attainment of applicable performance factors, or where no current year information is available, using information from the full preceding year.

Since all long-term incentive award payments under the incentive plans will be made on future dates, and because such payments will be based on the closing prices of Exxon Mobil stock and the number of performance shares and notional dividends in a participant's account on these future dates, it is impossible to calculate what payments, if any, an employee, including a Mobil named executive officer, with one or more outstanding conditional long-term incentive awards may become entitled to receive.

If the closing had occurred on March 1, 1999, each Mobil named executive officer would have become entitled to a payment upon the closing of the merger of a short-term incentive cash award for 1998, estimated to equal the following amounts: \$256.283 to Mr. Noto; \$145,750 to Mr. Renna; \$70,417 to Mr. DeLoach; \$56,250 to Mr. Cramer; and \$56,250 to Mr. Pryor.

Management Retention Plan

The management retention plan provides for conditional retention awards to selected executives of Mobil, including all of the Mobil named executive officers and eight other executive officers. Generally, payment under the management retention plan is only made after normal retirement, an approved early retirement, or the death or disability of a participant, provided that the participant's performance was at a level satisfactory to Mobil over the period the award remained conditional. Before the merger, the MCOC determined that all current management retention plan participants had rendered long-term service to Mobil at a level satisfactory to Mobil. In the merger agreement, Exxon acknowledged that the MCOC had determined that all participants covered by the management retention plan had performed at a level satisfactory to Mobil over the period that the conditional retention awards were outstanding and, accordingly, that all participants would be entitled to full payment under the management retention plan were they to retire or otherwise terminate their employment with Mobil. Exxon agreed to give considerable weight to such determination in administering the management retention plan after the merger, given the significant length of time that has elapsed since the award grants.

If the closing had occurred on March 1, 1999, and if the employment of each Mobil named executive officer had terminated immediately following that time, the amount payable under the management retention plan in respect of retention awards, based upon the per share closing price of Mobil stock on March 1, 1999 of \$81 would have been \$2,185,704 to Mr. Noto: \$1,985,553 to Mr. Renna; \$1,385,019 to Mr. DeLoach; \$923,238 to Mr. Cramer; and \$461,538 to Mr. Pryor.

Rabbi Trust

Mobil maintains an irrevocable "rabbi trust" which secures Mobil's obligations under certain employee benefit and executive compensation programs, including the management retention plan and the obligations under the severance plan relating to employees, including all executive officers, in salary group 20 or higher. As of December 31, 1998, the rabbi trust held assets valued at approximately \$692,951,000. The rabbi trust will continue to hold assets following the merger.

Application of Past Practices

Exxon has agreed that the incentive plans, the management retention plan, the supplemental pension annuity program of Mobil Oil Corporation, the executive life insurance program of Mobil Oil Corporation and the severance plan, as well as any award made under any of these executive arrangements, will be administered in accordance with the past practices and interpretations of the Mobil Board and the MCOC with respect to eligibility,

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Chapter One - The Merger

vesting, term and payment, among other matters. Any question regarding the past practices and interpretations of the Mobil Board and the MCOC and the application of these past practices and interpretations to the type of facts and circumstances in a given case will be referred to Mr. Noto or his designee for a final decision. This decision shall not be inconsistent with the intention of the merger agreement and the merger,

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Chapter One - The Merger

#### THE MERGER AGREEMENT

The following summary of the merger agreement is qualified by reference to the complete text of the merger agreement, which is incorporated by reference and attached as Annex A.

Structure of the Merger

Under the merger agreement, an Exxon subsidiary will merge into Mobil so that Mobil becomes a wholly-owned subsidiary of Exxon Mobil.

Timing of Closing

The closing will occur within three business days after the day on which the last of the conditions set forth in the merger agreement has been satisfied or waived, unless Exxon and Mobil agree to a different date. We expect that, immediately upon the closing of the merger, we will file a merger certificate with the Secretary of State of the State of Delaware, at which time the merger will be effective.

Merger Consideration

The merger agreement provides that each share of Mobil common stock outstanding immediately prior to the effective time will, at the effective time, be converted into the right to receive 1.32015 shares of Exxon Mobil common stock. However, any shares of Mobil common stock held by Mobil as treasury stock or owned by Exxon or any subsidiary of Exxon will be canceled without any payment for those shares. Shares held in Mobil's rabbi trust will not be treated as treasury stock for this purpose.

In addition, each outstanding share of Mobil ESOP preferred stock held in the leveraged ESOP portion of the Employees Savings Plan of Mobil Oil Corporation will, at the effective time, be converted into the right to receive one share of a new series of Exxon preferred stock (the "Exxon Mobil ESOP preferred stock") having, to the extent possible, terms identical to those of the Mobil ESOP preferred stock.

Treatment of Mobil Stock Options; Other Mobil Stock-Based Awards

At the effective time, each outstanding option granted by Mobil to purchase shares of Mobil common stock will be converted into an option to acquire Exxon Mobil common stock having the same terms and conditions as the Mobil stock option had before the effective time. The number of shares that the new Exxon Mobil option will be exercisable for and the exercise price of the new Exxon Mobil option will reflect the exchange ratio in the merger.

Each other stock-based award granted by Mobil under its employee or director plans or arrangements maintained as of December 1, 1998 will be converted, as of the effective time, into a similar Exxon Mobil stock-based award, adjusted as appropriate to preserve the award's inherent value. For additional information on Mobil stock-based awards, see "Interests of Certain Persons in the Merger" on page I-49.

Exchange of Shares

We will appoint an exchange agent to handle the exchange of Mobil stock certificates in the merger for Exxon Mobil stock and the payment of cash for fractional shares of Mobil stock. Soon after the closing, the exchange agent will send to each holder of Mobil stock a letter of transmittal for use in the exchange and instructions explaining how to surrender Mobil stock certificates to the exchange agent. Holders of Mobil stock that surrender their certificates to the exchange agent, together with a properly completed letter of transmittal, will receive the appropriate merger consideration. Holders of unexchanged shares of Mobil stock will not be entitled to receive any dividends or other distributions payable by Exxon Mobil after the closing until their certificates are surrendered.

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Chapter One - The Merger

Exxon Mobil will not issue any fractional shares in the merger. Holders of Mobil common stock will receive a cash payment in the amount of the proceeds from the sale of their fractional shares in the market.

Exxon Mobil Board and Related Matters

Exxon has agreed to take the necessary corporate action so that, as of the closing:

- o The Exxon Mobil Board size will be increased from 13 to 19
- Two employee directors of Mobil will become directors of Exxon Mobil.
   They are expected to be Lucio A. Noto and Eugene A. Renna.
- o Four non-employee directors of Mobil will become directors of Exxon Mobil. They are expected to be Donald V. Fites, Charles A. Heimbold, Jr., Helene L. Kaplan and J. Richard Munro.
- o Mr. Noto will become Vice-Chairman of the Exxon Mobil Board.
- At least one Mobil designee will become a member of each of the Exxon Mobil Audit Committee and the Exxon Mobil Compensation Committee.

If the closing is within nine months of the next regularly scheduled annual meeting of shareholders of Exxon Mobil, Exxon has agreed, in each case as of such next annual meeting, * to nominate the Mobil designees to the Exxon Mobil Board, * to elect Mr. Noto as Vice Chairman, and * to have at least one Mobil designee on each of the Compensation Committee and Audit Committee of Exxon Mobil.

#### Certain Covenants

Each of Exxon and Mobil has undertaken certain covenants in the merger agreement. The following summarizes the more significant of these covenants.

No Solicitation by Mobil. Mobil has agreed that it and its subsidiaries and their officers, directors, employees and advisers will not take action to solicit or encourage an offer for an alternative acquisition transaction involving Mobil of a nature defined in the merger agreement.

Restricted actions include engaging in discussions or negotiations with any potential bidder, or disclosing non-public information relating to Mobil or its subsidiaries or affording access to their properties, books or records to a potential bidder. These actions are permitted in response to an unsolicited bona fide offer so long as prior to doing so: * the Mobil Board by a majority vote determines in its good faith judgment that it is necessary to do so to comply with its fiduciary duty to shareholders, after receiving the advice of outside legal counsel, and * Mobil receives from such person an executed confidentiality agreement with terms no less favorable to Mobil than those contained in the existing confidentiality agreement between Exxon and Mobil.

Mobil must keep Exxon informed of the identity of any potential bidder and the terms and status of any offer. If its Board reaches the fiduciary duty determination described in the previous paragraph that it is necessary to do so, Mobil can withhold that information.

Mobil Board's Covenant to Recommend. The Mobil Board has agreed to recommend the approval and adoption of the merger agreement to Mobil's shareholders. However, the Mobil Board is permitted not to make, to withdraw or to modify in a manner adverse to Exxon this recommendation if the Mobil Board by a majority vote determines in its good faith judgment that it is necessary to do so to comply with its fiduciary duty to shareholders under applicable law, after receiving the advice of outside legal counsel, and * Mobil and the senior officers and directors of Mobil have substantially complied with their obligations under the nosolicitation covenant described above under "--No Solicitation by Mobil."

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Exxon Board's Covenant to Recommend. The Exxon Board has agreed to recommend the approval of the Exxon Merger Proposals to Exxon's shareholders. Rowever, the Exxon Board is permitted not to make, to withdraw or to modify in a manner adverse to Mobil this recommendation if the Exxon Board by a majority vote determines in its good faith judgment that it is necessary to do so to comply with its fiduciary duty to shareholders under applicable law, after receiving the advice of outside legal counsel.

Interim Operations of Exxon and Mobil. Each of Exxon and Mobil has undertaken a separate covenant that places restrictions on it and its subsidiaries until either the effective time or the merger agreement is terminated. In general, Exxon and its subsidiaries and Mobil and its subsidiaries are required to conduct their business in the ordinary course consistent with past practice and to use their reasonable best efforts to preserve intact their business organizations and relationships with third parties. The companies have also agreed to some specific restrictions which are subject to exceptions described in the merger agreement. The following table summarizes the more significant of these restrictions undertaken by each company:

<table></table>		
Restriction	Exxon	Mobil
<\$>	<c></c>	<2>
amending its organizational documents	0	•
P-11-11-11-11-1-1-1-1-1-1-1-1-1-1-1-1-1		

entering into any merger, liquidation or other significant transaction		
issuing or disposing of equity securities, options or other	- militari	
securities convertible into or exercisable for equity		
securities, except to a limited extent to employees or directors	0	
splitting, combining or reclassifying its capital stock	D	***********
declaring dividends, except for regular quarterly cash dividends as they may periodically be increased	*********	
consistent with past practice and required dividends on		
preferred stock	O	
redeeming or repurchasing its capital stock, except in		
limited instances to prevent dilution	O	
amending the terms of any outstanding stock options	34333333137	•
making capital expenditures, subject to certain ordinary	*********	
course exceptions		
increasing employee compensation or benefits except for normal ordinary course increases consistent with past	63355555333	***********
practice		
***************************************		
acquiring or disposing of material assets, except for disposing of assets pursuant to existing commitments		
changing its accounting policies	mentere	***************************************
entering into any material joint venture or partnership	5555555555	
taking any other action that would make any representation or warranty by it inaccurate in any material respect	6	
or warranty by it inaccurate in any material respect		THE WALL STORY

  | ************* ||  |  |  |
Best Efforts Covenant. Exxon and Mobil have agreed to cooperate with each other and use their best efforts to take all actions and do all things necessary or advisable under the merger agreement and applicable laws to complete the merger and the other transactions contemplated by the merger agreement. However, neither Exxon

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Chapter One - The Merger

nor Mobil is required to take any action if the result would give Exxon the right to decline to close the merger because such action could reasonably be expected to result in a substantial detriment to Exxon, Mobil and their subsidiaries, taken as a whole.

Certain Employee Benefits Matters. The merger agreement provides that Exxon Mobil will cause Mobil to honor in accordance with their terms all obligations under Mobil's executive benefit arrangements and under all other existing Mobil employee and retiree arrangements and plans to the extent entitlements or rights exist under those arrangements or plans as of the closing.

Exxon has also agreed, following the closing, to provide Mobil employees who were employed by Mobil or its subsidiaries at the closing and who continue as employees of Exxon Mobil or its subsidiaries, for so long as they remain so employed, employee benefits, other than salary or incentive compensation, * pursuant to benefit plans and arrangements as provided to those employees immediately prior to the closing, or * pursuant to benefit plans and arrangements maintained by Exxon Mobil providing coverage and benefits which, in the aggregate, are no less favorable than those provided to employees of Exxon Mobil in positions comparable to the positions held by the continuing Mobil employees.

In addition, Exxon has agreed that, following the closing, Exxon Mobil will continue to provide former employees of Mobil and its subsidiaries (and to Mobil employees whose employment terminates prior to the closing) post retirement benefits, other than pensions, * pursuant to benefit plans and arrangements applicable to those retirees as in effect as of December 1, 1998, or * pursuant to benefit plans or arrangements maintained by Exxon Mobil or its subsidiaries providing post-retirement coverage and benefits, other than pensions, which, in the aggregate, are no less favorable than those provided to former employees of Exxon.

Please see "Interests of Certain Persons in the Merger," beginning on page I-49, for additional information on employee benefits matters covered in the merger agreement.

Indemnification and Insurance of Mobil Directors and Officers, Exxon has agreed that:

o For seven years after closing, it will indemnify former Mobil directors, officers and employees for liabilities from their acts or omissions in those capacities occurring prior to closing to the extent provided under Mobil's charter and by-laws as in effect on December 1, 198

- o It will cause Mobil to honor all indemnification agreements with its former directors, officers and employees in effect as of December 1, 1948
- o For seven years after closing, it will provide officers' and directors' liability insurance covering acts or omissions occurring prior to closing by each person currently covered by Mobil's officers' and directors' liability insurance policy. This Exxon Mobil policy must be no less favorable than the Mobil policy in effect on December 1, 1998, except that Exxon Mobil will only be obligated to pay up to 300% of the annual premium paid by Mobil for such insurance as of December 1, 1998. Exxon may provide this coverage through a policy underwritten by a wholly-owned Exxon subsidiary.

Certain Other Covenants. The merger agreement contains mutual covenants of the parties, the most significant of which are that each party agrees:

- not to jeopardize the intended tax or accounting treatment of the merger, and
- o to establish a transition committee to plan the integration of Exxon and Mobil after the closing.

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Chapter One - The Merger

Representations and Warranties

The merger agreement contains substantially reciprocal representations and warranties made by Exxon and Mobil to each other. The most significant of these relate to:

* corporate authorization to enter into the contemplated transaction
* the shareholder votes required to approve the contemplated
transaction * governmental approvals required in connection with the
contemplated transaction * absence of any breach of organizational
documents, law or certain material agreements as a result of the
contemplated transaction * capitalization * ownership of
subsidiaries * filings with the SEC * information provided by it
for inclusion in this joint proxy statement/prospectus * financial
statements * absence of certain material changes since a specified
balance sheet date * absence of undisclosed material liabilities *
litigation * tax matters * employee benefits matters *
compliance with laws * finders' or advisors' fees * environmental
matters * absence of circumstances inconsistent with the intended
accounting treatment of the merger and * the receipt of accountant's
letters regarding accounting treatment of the merger.

In addition, Mobil represents and warrants to Exxon as to certain other matters, including the inapplicability of the Delaware anti-takeover statute and Mobil's shareholder rights plan to the merger and the Mobil stock option. For information about the anti-takeover statute and the rights plan, see "Chapter Three--Certain Legal Information--Comparison of Shareholder Rights--Shareholder Rights Plan" and "Certain Business Combinations" on pages III-4 and III-6.

The representations and warranties in the merger agreement do not survive the closing or termination of the merger agreement.

Conditions to the Completion of the Merger

Mutual Closing Conditions. The obligations of Exxon and Mobil to complete the merger are subject to the satisfaction or, to the extent legally permissible, waiver of the following conditions:

- o approval by the Exxon and Mobil shareholders
- o expiration of the HSR Act waiting period
- o approval by the European Commission of the contemplated transactions
- o absence of legal prohibition on completion of the merger
- o Exxon's registration statement on Form S-4, which includes this proxy statement/prospectus, being effective and not subject to any stop order by the SEC
- a approval for the listing on the NYSE of the shares of Exxon Mobil common stock to be issued in the merger
- o receipt of letters from the independent public accountants of Exxon and Mobil reconfirming their concurrence with Exxon's and Mobil's managements, respectively, that "pooling of interests" accounting treatment for the merger is appropriate

- receipt of opinions of Exxon's and Mobil's counsel that the merger will qualify as a tax-free reorganization
- o absence of a material adverse effect or any reasonable expectation of a material adverse effect on Exxon or Mobil during the period from December 1, 1998 until closing

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Chapter One - The Merger

- o accuracy as of closing of the representations and warranties made by the other party to the extent specified in the merger agreement
- o performance in all material respects by the other party of the obligations required to be performed by it at or prior to closing

Additional Closing Conditions for Exxon's Benefit. Exxon's obligation to complete the merger is subject to the following additional conditions:

- o there being no proceeding seeking to limit Exxon's ownership of Mobilor to compel divestiture of assets, in either case to an extent that could reasonably be expected to result in a substantial detriment to Exxon and Mobil taken as a whole
- o all regulatory approvals for the merger being obtained on terms that are not reasonably likely to result in such a substantial detriment

Termination of the Merger Agreement

Right to Terminate. The merger agreement may be terminated at any time prior to the closing in any of the following ways:

- (a) The merger agreement may be terminated by mutual written consent of Exxon and Mobil.
  - (b) The merger agreement may be terminated by either Exxon or Mobil if:
    - the merger has not been completed by December 1, 1999. However, that date becomes June 30, 2000 if the reason for not closing by December 1, 1999 is that the regulatory conditions specified in the merger agreement have not been satisfied by that date.
    - Exxon or Mobil shareholders fail to give the necessary approval at a duly held meeting, or
    - o there is a permanent legal prohibition to closing the merger.
- (c) The merger agreement may be terminated by Exxon if the Mobil Board fails to recommend the merger or withdraws or modifies in a manner adverse to Exxon its approval or recommendation of the merger, breaches its agreement to call the Mobil meeting or recommends a superior offer.
  - (d) The merger agreement may be terminated by Mobil if:
    - the Mobil Board authorizes Mobil, subject to complying with the merger agreement, to enter into a binding written agreement concerning an acquisition proposal for at least a majority of the Mobil stock on terms the Mobil Board determines, in good faith after consultation with its financial advisors, are more favorable to Mobil shareholders than the merger, and Mobil notifies Exxon in writing that it intends to enter into such an agreement, attaching the most current version of the agreement or a description of all its material terms and conditions.
    - Exxon does not make an offer, within three business days after receiving the notice, that the Mobil Board determines, in good faith after consultation

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with its financial advisors, is at least as favorable to the Mobil shareholders as the superior proposal, and

 Mobil has paid Exxon the cash termination fee described under "--Termination Fees Payable by Mobil" below. (e) The merger agreement may be terminated by Mobil if the Exxon Board fails to recommend the merger or withdraws or modifies in a manner adverse to Mobil its approval or recommendation of the merger or breaches its agreement to call the Exxon meeting.

Neither Exxon nor Mobil can terminate the merger agreement for the reasons described in the first bullet under paragraph (b) above if its failure to fulfill in any material respect its obligations under the merger agreement has resulted in the failure to complete the merger.

If the merger agreement is validly terminated, the agreement will become void without any liability on the part of any party unless such party is in willful breach thereof. However, the provisions of the merger agreement relating to expenses and termination fees, as well as the confidentiality agreement and the stock option agreement entered into between Exxon and Mobil, will continue in effect notwithstanding termination of the merger agreement.

Termination Fees Payable by Mobil. Mobil has agreed to pay Exxon a cash amount equal to \$1.5 billion in any of the following circumstances:

- o Mobil terminates the merger agreement as described in paragraph (d) under "--Right to Terminate" above
- Exxon terminates the merger agreement as described in paragraph (c) under "--Right to Terminate" above, unless at the relevant time Exxon is in material breach in the manner described in the merger agreement
- either Exxon or Mobil terminates the merger agreement in circumstances where the following three conditions are met:
  - o Mobil's shareholders do not vote in favor of the merger,
  - o a third party has made a proposal for an alternative transaction,
  - o within twelve months of the termination of the merger agreement Mobil enters into an agreement for an alternative transaction with that third party, or with another third party at a value per Mobil share higher than 595.96.

Termination Fees Payable by Exxon. Exxon has agreed to pay Mobil a cash amount equal to \$1.5 billion if Mobil terminates the merger agreement as described in paragraph (e) under "--Right to Terminate" above, unless at the relevant time Mobil is in material breach in the manner described in the merger agreement.

Other Expenses

Except as described above and subject to an exception relating to the payment of transfer taxes, all costs and expenses incurred in connection with the merger agreement and related transactions will be paid by the party incurring such costs or expenses. We estimate that merger-related fees and expenses, consisting primarily of SEC filing fees, fees and expenses of investment bankers, attorneys and accountants, and financial printing and other related charges, will total approximately \$90 million assuming the merger is completed.

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Chapter One - The Merger

# Amendments; Waivers

Any provision of the merger agreement may be amended or waived prior to closing if the amendment or waiver is in writing and signed, in the case of an amendment, by Mobil. Exxon and the merger subsidiary or, in the case of a waiver, by the party against whom the waiver is to be effective. After the approval of the merger agreement by the shareholders of Mobil, no amendment or waiver that by law requires further approval by shareholders may be made without the further approval of such shareholders.

Stock Option Agreement

The following summary of the stock option agreement is qualified by reference to the complete text of the agreement, which is incorporated by reference and attached as Annex B.

General. At the same time that Exxon and Mobil entered into the merger agreement, they also entered into a stock option agreement. Under the stock option agreement, Mobil granted Exxon an irrevocable option to purchase up to 136.5 million shares of Mobil common stock at a price per share of \$95.96. The option is exercisable in the circumstances described below.

Exercise of the Stock Option. Exxon can exercise the option in whole or in part at any time after the occurrence of any event, which we call a trigger event in this section, entitling Exxon to receive the cash termination fee payable by Mobil pursuant to the merger agreement (see "--Termination of the Merger Agreement--Termination Fees Payable by Mobil") and prior to termination of the option.

The option terminates upon the earliest to occur of

- (1) the closing of the merger,
- (2) 90 days after Mobil has paid the cash termination fee in full, or
- (3) one day after termination of the merger agreement so long as, in the case of this clause (3), no trigger event has occurred or could still occur.

If a third party makes an offer to acquire Mobil at a value per share of Mobil common stock which is lower than the \$95.96 exercise price specified above, the exercise price with respect to 1,000 option shares will be adjusted to be 90% of the per share value offered by the third party. The exercise price and number of option shares are also subject to certain anti-dilution and other adjustments specified in the stock option agreement.

Any purchase of option shares is subject to specified closing conditions, including receipt of applicable regulatory approvals. The closing of any purchase of option shares may be postponed for up to nine months beyond the termination of the option pending satisfaction of the conditions to purchase.

Cash Election. The stock option agreement further provides that, so long as the option is exercisable, Exxon may, instead of exercising the option, elect to require Mobil to pay to Exxon in exchange for the cancellation of the relevant portion of the option an amount in cash equal to the "spread" (as defined below) multiplied by the number of option shares as to which this cash election is made.

"Spread" means the excess, if any, over the exercise price of the higher of (1) the highest price per share of Mobil common stock paid or proposed to be paid by any third party pursuant to an alternative acquisition proposal and (2) the average of the closing price of the Mobil common stock on the NYSE at the end of its regular session, as reported on the Consolidated Tape, for the five consecutive trading days ending on and including the date immediately preceding the date on which Exxon notifies Mobil of this cash election.

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Listing and Registration Rights. Mobil has agreed to list the option shares on the NYSE and to grant Exxon customary rights to require registration by Mobil of option shares for sale by Exxon under the securities laws.

Limitation on Total Profit. The stock option agreement provides that, notwithstanding any other provision of that agreement or the merger agreement, Exxon's Total Profit (as defined below) will not exceed \$2 billion in the aggregate. If Exxon's Total Profit otherwise would exceed such amount, Exxon, at its sole election, may (a) pay cash to Mobil, (b) deliver to Mobil for cancellation Option Shares previously acquired by Exxon or (c) any combination thereof, so that Exxon's actually realized Total Profit does not exceed \$2 billion after taking into account the foregoing actions.

For purposes of the stock option agreement, "Total Profit" means the aggregate amount, before taxes, of the following: (1) (x) the cash amount actually received by Exxon in payment by Mobil of the termination fee under the merger agreement, less (y) any repayment by Exxon as described in the preceding paragraph; (2) the net cash amounts received by Exxon pursuant to the sale of option shares (or of any other securities into or for which such option shares are converted or exchanged), less Exxon's purchase price for such option shares (or other securities), plus (3) the aggregate amount received by Exxon pursuant to exercise of the cash election described under "--Cash Election" above.

The stock option agreement also provides that, notwithstanding any other provision of the agreement, the option may not be exercised for a number of option shares that would, as of the date of exercise, result in a Notional Total Profit (as described below) exceeding \$2 billion. For purposes of the stock option agreement, the "Notional Total Profit" with respect to the option shares for which Exxon may propose to exercise the option means the Total Profit determined as of the date Exxon notifies Mobil of its intent to exercise the option and assuming that the applicable option shares, together with all other option shares previously acquired upon exercise of the option and held by Exxon or its affiliates as of such date, were sold for cash at the NYSE closing price on the preceding trading day.

Effect of Option. The option is intended to make it more likely that the merger will be completed on the agreed terms and to compensate Exxon for its efforts and costs in case the merger is not completed under circumstances generally involving a third party proposal for a business combination with Mobil. Among other effects, the option could prevent an alternative business combination with Mobil from being accounted for as a "pooling of interests". The option may therefore discourage proposals for alternative business combinations with Mobil, even if a third party were prepared to offer Mobil shareholders consideration with a higher market value than the value of the Exxon Mobil stock to be exchanged for Mobil stock in the merger.

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2006

# UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

# FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 For the fiscal year ended December 31, 2006

or

□ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

> For the transition period from to Commission File Number 1-2256

# EXXON MOBIL CORPORATION

(Exact name of registrant as specified in its charter)

**NEW JERSEY** 

(State or other jurisdiction of incorporation or organization)

13-5409005 (I.R.S. Employer Identification Number)

5959 LAS COLINAS BOULEVARD, IRVING, TEXAS 75039-2298

(Address of principal executive offices) (Zip Code) (972) 444-1000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class

Name of Each Exchange on Which Registered

Common Stock, without par value (5,693,398,774 shares outstanding at January 31, 2007)

Registered securities guaranteed by Registrant;

SeaRiver Maritime Financial Holdings, Inc.

Twenty-Five Year Debt Securities due October 1, 2011

New York Stock Exchange

New York Stock Exchange

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ✓ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No 💉

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ______ No_____

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer and large accelerated filer" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ✓ Accelerated filer Non-accelerated filer

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Act). Yes ___ No ______ No

The aggregate market value of the voting stock held by non-affiliates of the registrant on June 30, 2006, the last business day of the registrant's most recently completed second fiscal quarter, based on the closing price on that date of \$61.35 on the New York Stock

Exchange composite tape, was in excess of \$364 billion.

Documents Incorporated by Reference: Proxy Statement for the 2007 Annual Meeting of Shareholders (Part III)

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# EXXON MOBIL CORPORATION FORM 10-K FOR THE FISCAL YEAR ENDED DECEMBER 31, 2006

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# PARTI

# Item 1. Business.

Exxon Mobil Corporation, formerly named Exxon Corporation, was incorporated in the State of New Jersey in 1882. On November 30, 1999, Mobil Corporation became a wholly-owned subsidiary of Exxon Corporation, and Exxon changed its name to Exxon Mobil Corporation.

Divisions and affiliated companies of ExxonMobil operate or market products in the United States and most other countries of the world. Their principal business is energy, involving exploration for, and production of, crude oil and natural gas, manufacture of petroleum products and transportation and sale of crude oil, natural gas and petroleum products. ExxonMobil is a major manufacturer and marketer of commodity petrochemicals, including olefins, aromatics, polyethylene and polypropylene plastics and a wide variety of specialty products. ExxonMobil also has interests in electric power generation facilities. Affiliates of ExxonMobil conduct extensive research programs in support of these businesses.

Exxon Mobil Corporation has several divisions and hundreds of affiliates, many with names that include ExxonMobil, Exxon, Esso or Mobil. For convenience and simplicity, in this report the terms ExxonMobil, Exxon, Esso and Mobil, as well as terms like Corporation, Company, our, we and its, are sometimes used as abbreviated references to specific affiliates or groups of affiliates. The precise meaning depends on the context in question.

Throughout ExxonMobil's businesses, new and ongoing measures are taken to prevent and minimize the impact of our operations on air, water and ground. These include a significant investment in refining infrastructure and technology to manufacture clean fuels as well as projects to reduce nitrogen oxide and sulfur oxide emissions and expenditures for asset retirement obligations. ExxonMobil's 2006 worldwide environmental expenditures for all such preventative and remediation steps, including ExxonMobil's share of equity company expenditures, were about \$3.2 billion, of which \$1.1 billion were capital expenditures and \$2.1 billion were included in expenses. The total cost for such activities is expected to remain in this range in 2007 and 2008 (with capital expenditures approximately 40 percent of the total).

Operating data and industry segment information for the Corporation are contained in the Financial Section of this report under the following: "Quarterly Information", "Note 17: Disclosures about Segments and Related Information" and "Operating Summary". Information on oil and gas reserves is contained in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report, Information on Company-sponsored research and development activities is contained in "Note 3: Miscellaneous Financial Information" of the Financial Section of this report.

The number of regular employees was 82.1 thousand, 83.7 thousand and 85.9 thousand at years ended 2006, 2005 and 2004, respectively. Regular employees are defined as active executive, management, professional, technical and wage employees who work full time or part time for the Corporation and are covered by the Corporation's benefit plans and programs. Regular employees do not include employees of the company-operated retail sites (CORS). The number of CORS employees was 24.3 thousand, 22.4 thousand and 19.3 thousand at years ended 2006, 2005 and 2004, respectively.

ExxonMobil maintains a website at www.exxonmobil.com. Our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934 are made available through our website as soon as reasonably practical after we electronically file or furnish the reports to the Securities and Exchange Commission. Also available on the Corporation's website are the Company's

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Corporate Governance Guidelines and Code of Ethics and Business Conduct, as well as the charters of the audit, compensation and nominating committees of the Board of Directors. All of these documents are available in print without charge to shareholders who request them. Information on our website is not incorporated into this report.

#### Item 1A. Risk Factors.

ExxonMobil's financial and operating results are subject to a number of factors, many of which are not within the Company's control. These factors include the following:

Industry and Economic Factors: The oil and gas business is fundamentally a commodity business. This means the operations and earnings of the Corporation and its affiliates throughout the world may be significantly affected by changes in oil, gas and petrochemical prices and by changes in margins on gasoline and other refined products. Oil, gas, petrochemical and product prices and margins in turn depend on local, regional and global events or conditions that affect supply and demand for the relevant commodity. These events or conditions are generally not predictable and include, among other things:

- · general economic growth rates and the occurrence of economic recessions;
- · the development of new supply sources;
- · adherence by countries to OPEC quotas;
- · supply disruptions;
- weather, including seasonal patterns that affect regional energy demand (such as the demand for heating oil or gas in winter) as well as severe weather events (such as hurricanes) that can disrupt supplies or interrupt the operation of ExxonMobil facilities;
- technological advances, including advances in exploration, production, refining and petrochemical manufacturing technology and advances in technology relating to energy usage;
- · changes in demographics, including population growth rates and consumer preferences; and
- · the competitiveness of alternative hydrocarbon or other energy sources.

Under certain market conditions, factors that have a positive impact on one segment of our business may have a negative impact on another segment and vice versa.

Competitive Factors: The energy and petrochemical industries are highly competitive. There is competition within the industries and also with other industries in supplying the energy, fuel and chemical needs of both industrial and individual consumers. The Corporation competes with other firms in the sale or purchase of needed goods and services in many national and international markets and employs all methods of competition which are lawful and appropriate for such purposes.

A key component of the Corporation's competitive position, particularly given the commodity-based nature of many of its businesses, is ExxonMobil's ability to manage expenses successfully. This requires continuous management focus on reducing unit costs and improving efficiency including through technology improvements, cost control, productivity enhancements and regular reappraisal of our asset portfolio as described elsewhere in this report.

Political and Legal Factors: The operations and earnings of the Corporation and its affiliates throughout the world have been, and may in the future be, affected from time to time in varying degree by political and legal factors including:

· political instability or lack of well-established and reliable legal systems in areas where the Corporation operates;

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- other political developments and laws and regulations, such as expropriation or forced divestiture of assets, unilateral cancellation or modification of contract terms, and de-regulation of certain energy markets;
- laws and regulations related to environmental or energy security matters, including those addressing alternative energy sources and the risks of global climate change;
- · restrictions on exploration, production, imports and exports;
- restrictions on the Corporation's ability to do business with certain countries, or to engage in certain areas of business within a
  country;
- · price controls;
- tax or royalty increases, including retroactive claims;
- · war or other international conflicts; and
- · civil unrest.

Both the likelihood of these occurrences and their overall effect upon the Corporation vary greatly from country to country and are not predictable. A key component of the Corporation's strategy for managing political risk is geographic diversification of the Corporation's assets and operations.

Project Factors: In addition to some of the factors cited above, ExxonMobil's results depend upon the Corporation's ability to develop and operate major projects and facilities as planned. The Corporation's results will therefore be affected by events or conditions that impact the advancement, operation, cost or results of such projects or facilities, including:

- the outcome of negotiations with co-venturers, governments, suppliers, customers or others (including, for example, our ability
  to negotiate favorable long-term contracts with customers, or the development of reliable spot markets, that may be necessary
  to support the development of particular production projects);
- · reservoir performance and natural field decline;
- changes in operating conditions and costs, including costs of third party equipment or services such as drilling rigs and shipping;
- · security concerns or acts of terrorism that threaten or disrupt the safe operation of company facilities; and
- the occurrence of unforeseen technical difficulties (including technical problems that may delay start-up or interrupt production from an Upstream project or that may lead to unexpected downtime of refineries or petrochemical plants).

See section 1 of Item 2 of this report for a discussion of additional factors affecting future capacity growth and the timing and ultimate recovery of reserves.

Market Risk Factors: See the "Market Risks, Inflation and Other Uncertainties" portion of the Financial Section of this report for discussion of the impact of market risks, inflation and other uncertainties.

Projections, estimates and descriptions of ExxonMobil's plans and objectives included or incorporated in Items 1, 2, 7 and 7A of this report are forward-looking statements. Actual future results, including project completion dates, production rates, capital expenditures, costs and business plans could differ materially due to, among other things, the factors discussed above and elsewhere in this report.

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# Item 1B. Unresolved Staff Comments.

None.

# Item 2. Properties.

Part of the information in response to this item and to the Securities Exchange Act Industry Guide 2 is contained in "Note 8: Property, Plant and Equipment and Asset Retirement Obligations" and in the "Supplemental Information on Oil and Gas Exploration and Production Activities," both included in the Financial Section of this report.

# Information with regard to oil and gas producing activities follows:

# 1. Net Reserves of Crude Oil and Natural Gas Liquids and Natural Gas at Year-End 2006

Estimated proved reserves are shown in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report. No major discovery or other favorable or adverse event has occurred since December 31, 2006, that would cause a significant change in the estimated proved reserves as of that date. For information on the standardized measure of discounted future net cash flows relating to proved oil and gas reserves, see the "Standardized Measure of Discounted Future Cash Flows" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report.

The table below summarizes the oil-equivalent proved reserves in each geographic area for consolidated subsidiaries as detailed in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report for the year ended December 31, 2006. The Corporation has reported 2005 and 2006 proved reserves on the basis of December 31 prices and costs, Gas is converted to an oil-equivalent basis at six million cubic feet per one thousand barrels.

	United States	Canada	Europe	Africa	Asia Pacific/ Middle East	Russia/ Caspian	South America	Total Consolidated
Liquids	1,884	962	748	(millio 2,089	ons of barre 1,287	791	433	8,194
Natural gas	12,049	1,517	7,089	(billion 986	9,583	eet) 789	467	32,480
Oil-equivalent basis	3,892	1,215	1,930	illions of o 2,253	il-equivalen 2,884	t barrels) 922	511	13,607

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Additional detail on developed and undeveloped oil-equivalent proved reserves is shown in the table below.

	Year-	Year-End 2006		
	Developed	Undeveloped	Developed	Undeveloped
A CONTRACTOR OF THE PARTY OF TH	_	(millions of oil-e	quivalent barrels)	
Consolidated Subsidiaries				
United States	3,013	879	3,411	984
Canada	921	294	862	254
Europe	1,448	482	1,711	572
Africa	1,416	837	1,281	1,171
Asia Pacific/Middle East	2,070	814	1,475	253
Russia/Caspian	183	739	93	751
South America	252	259	279	275
Total	9,303	4,304	9,112	4,260
Equity Companies				
United States	329	84	345	91
Europe	1,675	429	1,713	468
Asia Pacific/Middle East	1,948	2,995	1,938	2,629
Russia/Caspian	679	364	713	373
Total	4,631	3,872	4,709	3,561

In the preceding reserves information, and in the reserves tables in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report, consolidated subsidiary and equity company reserves are reported separately. However, the Corporation operates its business with the same view of equity company reserves as it has for reserves from consolidated subsidiaries.

The Corporation's overall volume capacity outlook, based on projects coming on stream as anticipated, is for production capacity to grow over the period 2007-2011. However, actual volumes will vary from year to year due to the timing of individual project start-ups, operational outages, reservoir performance, regulatory changes, asset sales, weather events, price effects on production sharing.

The estimation of proved reserves, which is based on the requirement of reasonable certainty, is an ongoing process based on rigorous technical evaluations, commercial and market assessments and detailed analysis of well information such as flow rates and reservoir pressure declines. Furthermore, the Corporation only records proved reserves for projects which have received significant funding commitments by management made toward the development of the reserves. Although the Corporation is reasonably certain that proved reserves will be produced, the timing and amount recovered can be affected by a number of factors including completion of development projects, reservoir performance, regulatory approvals and significant changes in projections of long-term oil and gas price levels.

# 2. Estimates of Total Net Proved Oil and Gas Reserves Filed with Other Federal Agencies

During 2006, ExxonMobil filed proved reserves estimates with the U.S. Department of Energy on Forms EIA-23 and EIA-28. The information on Form EIA-28 is presented on the same basis as the registrant's Annual Report on Form 10-K for 2005, which shows ExxonMobil's net interests in all liquids and gas reserve volumes and changes thereto from both ExxonMobil-operated properties and properties operated by others. The data on Form EIA-23, although consistent with the data on Form EIA-28, is presented on a different basis, and includes 100 percent of the oil and gas volumes from ExxonMobil-operated properties only, regardless of the company's net interest. In addition,

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Form EIA-23 information does not include gas plant liquids. The difference between the oil reserves and gas reserves reported on EIA-23 and those reported in the registrant's Annual Report on Form 10-K for 2005 exceeds five percent.

# 3. Average Sales Prices and Production Costs per Unit of Production

Reference is made to the "Results of Operations" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report. Average sales prices have been calculated by using sales quantities from the Corporation's own production as the divisor. Average production costs have been computed by using net production quantities for the divisor. The volumes of crude oil and natural gas liquids (NGL) production used for this computation are shown in the reserves table in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report. The volumes of natural gas used in the calculation are the production volumes of natural gas available for sale and thus are different from those shown in the reserves table in the "Oil and Gas Reserves" part of the "Supplemental Information on Oil and Gas Exploration and Production Activities" portion of the Financial Section of this report due to volumes consumed or flared. The volumes of natural gas were converted to oil-equivalent barrels based on a conversion factor of six thousand cubic feet per barrel.

# 4. Gross and Net Productive Wells

		Year-End 2006				Year-End 2005			
1		Oil		Gas		Oil		ıs	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	
United States	28,139	10,644	9,059	5,468	28,288	10,865	9,187	5,441	
Canada	5,662	4.975	5,857	3,058	5,967	5,214	6,115	2,991	
Europe	1,780	528	1,300	509	1,872	590	1,294	512	
Africa	823	348	12	5	674	277	14	6	
Asia Pacific/Middle East	2,191	587	267	184	1,991	532	259	180	
Russia/Caspian	82	17		-	77	16	2	1	
South America	154	64	85	30	154	. 64	89	30	
Total	38,831	17,163	16,580	9,254	39,023	17,558	16,960	9,161	
			$\overline{}$	_	_	_	_	_	

The numbers of wells operated at year-end 2006 were 16,914 gross wells and 13,988 net wells. At year-end 2005, the numbers of operated wells were 17,351 gross wells and 14,028 net wells.

# 5. Gross and Net Developed Acreage

	Year-E	Year-End 2006		and 2005	
	Gross	Net	Gross	Net	
		(thousand	ls of acres)		
United States	9,045	5,178	9,194	5,260	
Canada	4,812	2,099	4,869	2,238	
Europe	10,678	4,418	11,303	4,687	
Africa	1,842	717	1,497	545	
Asia Pacific/Middle East	8,210	1,655	7,876	1,570	
Russia/Caspian	531	116	531	116	
South America	690	232	690	232	
Total	35,808	14,415	35,960	14,648	

Note: Separate acreage data for oil and gas are not maintained because, in many instances, both are produced from the same acreage.

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# 6. Gross and Net Undeveloped Acreage

	Year-End 2006		Year-End 2005		
	Gross	Net	Gross	Net	
	- 1 Table	(thousands of acres)			
United States	9,917	6,062	10,388	6,413	
Canada	10,659	4,785	10,816	4,822	
Europe	8,089	2,727	8,782	2,778	
Africa	39,306	24,075	49,328	29,048	
Asia Pacific/Middle East	13,466	7,462	7,114	3,797	
Russia/Caspian	2,181	449	2,561	569	
South America	20,803	17,229	26,552	19,513	
Total	104,421	62,789	115,541	66,940	
		71.00		_	

ExxonMobil's investment in developed and undeveloped acreage is comprised of numerous concessions, blocks and leases. The terms and conditions under which the Corporation maintains exploration and/or production rights to the acreage are property-specific, contractually defined and vary significantly from property to property. Work programs are designed to ensure that the exploration potential of any property is fully evaluated before expiration. In some instances, the Corporation may elect to relinquish acreage in advance of the contractual expiration date if the evaluation process is complete and there is not a business basis for extension. In cases where additional time may be required to fully evaluate acreage, the Corporation has generally been successful in obtaining extensions.

# 7. Summary of Acreage Terms in Key Areas

# UNITED STATES

Oil and gas leases have an exploration period ranging from one to ten years, and a production period that normally remains in effect until production ceases. In some instances, a "fee interest" is acquired where both the surface and the underlying mineral interests are owned outright.

# CANADA

Exploration permits are granted for varying periods of time with renewals possible. Production leases are held as long as there is production on the lease. The majority of Cold Lake leases were taken for an initial 21-year term in 1968-1969 and renewed for a second 21-year term in 1989-1990. The exploration acreage in eastern Canada is currently held by work commitments of various amounts.

# **EUROPE**

# Germany

Exploration concessions are granted for an initial maximum period of five years with possible extensions of up to three years for an indefinite period. Extensions are subject to specific, minimum work commitments. Production licenses are normally granted for 20 to 25 years with multiple possible extensions as long as there is production on the license.

# Netherlands

Under the Mining Law, effective January 1, 2003, exploration and production licenses for both onshore and offshore areas are issued for a period as explicitly defined in the license. The term is based on the period of time necessary to perform the activities for which the license is issued. License conditions are stipulated in the Mining Law.

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Production rights granted prior to January 1, 2003, remain subject to their existing terms, and differ slightly for onshore and offshore areas. Onshore production licenses issued prior to 1988 were indefinite; from 1988 they were issued for a period as explicitly defined in the license, ranging from 35 to 45 years. Offshore production licenses issued before 1976 were issued for a fixed period of 40 years; from 1976 they were again issued for a period as explicitly defined in the license, ranging from 15 to 40 years.

# Norway

Licenses issued prior to 1972 were for an initial period of six years and an extension period of 40 years, with relinquishment of at least one-fourth of the original area required at the end of the sixth year and another one-fourth at the end of the ninth year. Licenses issued between 1972 and 1997 were for an initial period of up to six years (with extension of the initial period of one year at a time up to ten years after 1985), and an extension period of up to 30 years, with relinquishment of at least one-half of the original area required at the end of the initial period. Licenses issued after July 1, 1997, have an initial period of up to ten years and a normal extension period of up to 30 years or in special cases of up to 50 years, and with relinquishment of at least one-half of the original area required at the end of the initial period.

# United Kingdom

Acreage terms are fixed by the government and are periodically changed. For example, many of the early licenses issued under the first four licensing rounds provided for an initial term of six years with relinquishment of at least one-half of the original area at the end of the initial term, subject to extension for a further 40 years. ExxonMobil's licenses issued in 2005 as part of the 23rd licensing round have an initial term of four years with a second term extension of four years and a final term of 18 years. There is a mandatory relinquishment of 50-percent of the acreage after the initial term and of all acreage that is not covered by a development plan at the end of the second term.

#### AFRICA

# Angola

Exploration and production activities are governed by production sharing agreements with an initial exploration term of four years and an optional second phase of two to three years. The production period is for 25 years, and agreements generally provide for a negotiated extension.

# Cameroon

Exploration and production activities are governed by various agreements negotiated with the national oil company and the government of Cameroon. Exploration permits are granted for terms from four to 16 years and are generally renewable for multiple periods up to four years each. Upon commercial discovery, mining concessions are issued for a period of 25 years with one 25-year extension.

# Chad

Exploration permits are issued for a period of five years, and are renewable for one or two further five-year periods. The terms and conditions of the permits, including relinquishment obligations, are specified in a negotiated convention. The production term is for 30 years and may be extended at the discretion of the government.

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# Equatorial Guinea

Exploration and production activities are governed by production sharing contracts negotiated with the State Ministry of Mines, Industry and Energy. The exploration periods are for ten to 15 years with limited relinquishments in the absence of commercial discoveries. The production period for crude oil is 30 years while the production period for gas is 50 years. A new Hydrocarbons Law was enacted in November 2006. Under the new law, the exploration terms for new production sharing contracts are expected to be four to five years with a maximum of two one-year extensions, unless the Ministry agrees otherwise.

# Nigeria

Exploration and production activities in the deepwater offshore areas are typically governed by production sharing contracts (PSCs) with the national oil company, the Nigerian National Petroleum Corporation (NNPC). NNPC holds the underlying Oil Prospecting License (OPL) and any resulting Oil Mining Lease (OML). The terms of the PSCs are generally 30 years, including a tenyear exploration period (an initial exploration phase plus one or two optional periods) covered by an OPL. Upon commercial discovery, an OPL may be converted to an OML. Partial relinquishment is required under the PSC at the end of the ten-year exploration period, and OMLs have a 20-year production period that may be extended.

Some exploration activities are carried out in deepwater by joint ventures with local companies holding interests in an OPL. OPLs in deepwater offshore areas are valid for ten years and are non-renewable, while in all other areas the licenses are for five years and also are non-renewable. Demonstrating a commercial discovery is the basis for conversion of an OPL to an OML.

OMLs granted prior to the 1969 Petroleum Act (i.e., under the Mineral Oils Act 1914, repealed by the 1969 Petroleum Act) were for 30 years onshore and 40 years in offshore areas and are renewable upon 12 months' written notice, for further periods of 30 and 40 years, respectively. Operations under these pre-1969 OMLs are conducted under a joint venture agreement with NNPC rather than a PSC.

OMLs granted under the 1969 Petroleum Act, which include all deepwater OMLs, have a maximum term of 20 years without distinction for onshore or offshore location and are renewable, upon 12 months' written notice, for another period of 20 years. OMLs not held by NNPC are also subject to a mandatory 50-percent relinquishment after the first ten years of their duration.

The Memorandum of Understanding (MOU) defining commercial terms applicable to existing joint venture oil production was renegotiated and executed in 2000. The MOU is effective for a minimum of three years with possible extensions on mutual agreement and is terminable on one calendar year's notice.

# ASIA PACIFIC / MIDDLE EAST

# Australia

Exploration and production activities are conducted offshore and are governed by Federal legislation. Exploration permits are granted for an initial term of six years with two possible five-year renewal periods. A 50-percent relinquishment of remaining area is mandatory at the end of each renewal period. Retention leases may be granted for resources that are not commercially viable at the time of application, but are expected to become commercially viable within 15 years. These are granted for periods of five years and renewals may be requested. Prior to July 1998, production licenses were granted initially for 21 years, with a further renewal of 21 years and thereafter "indefinitely", i.e., for

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the life of the field (if no operations for the recovery of petroleum have been carried on for five years, the license may be terminated). Effective from July 1998, new production licenses are granted "indefinitely".

# Indonesia

Exploration and production activities in Indonesia are generally governed by cooperation contracts, usually in the form of a production sharing contract, negotiated with BPMIGAS, a government agency established in 2002 to manage upstream oil and gas activities. Formerly this activity was carried out by Pertamina, the government owned oil company, which is now a competing limited liability company.

# Japan

The Mining Law provides for the granting of concessions that convey exploration and production rights. Exploration rights are granted for an initial two-year period, and may be extended for two two-year periods for gas and three two-year periods for oil. Production rights have no fixed term and continue until abandonment so long as the rights holder is fulfilling its obligations.

# Malaysia

Exploration and production activities are governed by production sharing contracts negotiated with the national oil company. The more recent contracts have an overall term of 24 to 38 years, depending on water depth, with possible extensions to the exploration and/or development periods. The exploration period is five to seven years with the possibility of extensions, after which time areas with no commercial discoveries will be deemed relinquished. The development period is from four to six years from commercial discovery, with the possibility of extensions under special circumstances. Areas from which commercial production has not started by the end of the development period will be deemed relinquished if no extension is granted. All extensions are subject to the national oil company's prior written approval. The total production period is 15 to 25 years from first commercial lifting, not to exceed the overall term of the contract.

# Papua New Guinea

Exploration and production activities are governed by the Oil and Gas Act. Petroleum Prospecting licenses are granted for an initial term of six years with a five-year extension possible (an additional extension of three years is possible in certain circumstances). Generally, a 50-percent relinquishment of the license area is required at the end of the initial six-year term, if extended. Petroleum Development licenses are granted for an initial 25-year period. An extension of up to 20 years may be granted at the Minister's discretion. Petroleum Retention licenses may be granted for gas resources that are not commercially viable at the time of application, but may become commercially viable within the maximum possible retention time of 15 years. Petroleum Retention licenses are granted for five-year terms, and may be extended, at the Minister's discretion, twice for the maximum retention time of 15 years.

# Qatar

The State of Qatar grants gas production development project rights to develop and supply gas from the offshore North Field to permit the economic development and production of gas reserves sufficient to satisfy the gas and LNG sales obligations of these projects.

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# Republic of Yemen

Production sharing agreements (PSAs) negotiated with the government entitle the company to participate in exploration operations within a designated area during the exploration period. In the event of a commercial oil discovery, the company is entitled to proceed with development and production operations during the development period. The length of these periods and other specific terms are negotiated prior to executing the PSA. Existing production operations have a development period extending 20 years from first commercial declaration made in November 1985 for the Marib PSA and June 1995 for the Jannah PSA. The Government of Yemen awarded a five-year extension of the Marib PSA, but later repudiated the extension and expelled the concession holders. The parties are now in arbitration over the validity of the extension.

# Thailand

The Petroleum Act of 1971 allows production under ExxonMobil's concession for 30 years with a possible ten-year extension at terms generally prevalent at the time.

# United Arab Emirates

Exploration and production activities for the major onshore oilfields in the Emirate of Abu Dhabi are governed by a 75-year oil concession agreement executed in 1939 and subsequently amended through various agreements with the government of Abu Dhabi. An interest in the Upper Zakum field, a major offshore field, was acquired effective as of January 1, 2006, for a term expiring March 9, 2026, on fiscal terms consistent with the Company's existing interests in Abu Dhabi.

# RUSSIA/CASPIAN

# Azerbaijan

The production sharing agreement (PSA) for the development of the Azeri-Chirag-Gunashli field is established for an initial period of 30 years starting from the PSA execution date in 1994.

Other exploration and production activities are governed by PSAs negotiated with the national oil company of Azerbaijan. The exploration period consists of three or four years with the possibility of a one to three-year extension. The production period, which includes development, is for 25 years or 35 years with the possibility of one or two five-year extensions.

# Kazakhstan

Onshore: Exploration and production activities are governed by the production license, exploration license and joint venture agreements negotiated with the Republic of Kazakhstan. Existing production operations have a 40-year production period that commenced in 1993.

Offshore: Exploration and production activities are governed by a production sharing agreement negotiated with the Republic of Kazakhstan. The exploration period was six years followed by separate appraisal periods for each discovery. The production period for each discovery, which includes development, is for 20 years from the date of declaration of commerciality with the possibility of two ten-year extensions.

#### Russia

Terms for ExxonMobil's acreage are fixed by the production sharing agreement (PSA) that became effective in 1996 between the Russian government and the Sakhalin-1 consortium, of which ExxonMobil is the operator. The term of the PSA is 20 years from the Declaration of Commerciality, which would be 2021. The term may be extended thereafter in 10-year increments as specified in the PSA.

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# SOUTH AMERICA

Argentina

The onshore concession terms in Argentina are up to four years for the initial exploration period, up to three years for the second exploration period and up to two years for the third exploration period. A 50-percent relinquishment is required after each exploration period. An extension after the third exploration period is possible for up to five years. The total production term is 25 years with a tenyear extension possible, once a field has been developed.

### Venezuela

Exploration and production activities are governed by Association Agreements containing risk/profit provisions negotiated with the national oil company or its affiliates. Association Agreements are awarded for a term not to exceed 39 years. These agreements have an exploration and a production phase. The term of production begins after the exploration phase and runs for 20 years with the possibility of an extension, so long as the total contract term does not exceed 39 years.

Strategic association agreements (such as the Cerro Negro project) are typically limited to those projects that require vertical integration for extra heavy crude oil. Contracts are awarded for 35 years. Significant amendments to the contract terms require Venezuelan congressional approval. The Venezuelan Government has indicated a desire to increase ownership by the National Oil Company (PdVSA) to greater than 50 percent in the projects covered by these agreements and to make other changes to applicable fiscal terms.

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8. Number of Net Productive and Dry Wells Drilled		2006	2005	2004
A NAME AND POST OF THE PARTY OF			-	
A. Net Productive Exploratory Wells Drilled United States		10	13	11
Canada		3	1	2
Europe			4	3
Africa		4	5	2
Asia Pacific/Middle East		2 4 2	1	3 2 2
Russia/Caspian		_	-	1
South America		_	-	-
Total		21	24	21
10(4)		_	_	_
B. Net Dry Exploratory Wells Drilled		1.2		
United States		5	5	6
Canada		-	-	4
Europe		2	1 5	1 4
Africa		4	1	4
Asia Pacific/Middle East			1	
Russia/Caspian		1		
South America			_	
Total		12	13	15
C. Net Productive Development Wells Drilled		1		
United States		552	537	568
Canada		371	263	466
Europe		22	19	24
Africa		64	61	64
Asia Pacific/Middle East		25	50	35
Russia/Caspian		5	7	4
South America		2	9	3
Total		1,041	946	1,164
D. Net Dry Development Wells Drilled				
United States		5	8	13
Canada		1	2	2
Europe		4	2	2 2
Africa		1	-	-
Asia Pacific/Middle East		_	2	1
Russia/Caspian		-	-	-
South America		_	-	-
		11	14	18
Total			-	
Total number of net wells drilled		1,085	997	1,218
9. Present Activities				
A. Wells Drilling	Year-En	ıd 2006	Year-I	End 2005
	Gross	Net	Gross	Net
United States	214	109	148	84
http://www.aca.com/Archivon/adace/data/21000/000110212507012125/2106 htm			5/12	/2007

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Canada	223 182 148	94
Europe	55 11 46	12
Africa	50 19 53	21
Asia Pacific/Middle East	49 14 70	24
Russia/Caspian	33 6 38	8
South America	3 1 3	1
Total	627 342 506	244
		100000

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# B. Review of Principal Ongoing Activities in Key Areas

During 2006, ExxonMobil's activities were conducted, either directly or through affiliated companies, by ExxonMobil Exploration Company (for exploration), by ExxonMobil Development Company (for large development activities), by ExxonMobil Production Company (for producing and smaller development activities) and by ExxonMobil Gas & Power Marketing Company (for gas marketing). During this same period, some of ExxonMobil's exploration, development, production and gas marketing activities were also conducted in Canada by the Resources Division of Imperial Oil Limited, which is 69.6 percent owned by ExxonMobil.

Some of the more significant ongoing activities are set forth below:

### UNITED STATES

Exploration and delineation of additional hydrocarbon resources continued in 2006. At year-end 2006, ExxonMobil's acreage totaled 11.2 million net acres, of which 2.6 million net acres were offshore. ExxonMobil was active in areas onshore and offshore in the lower 48 states and in Alaska.

During 2006, 543.9 net exploration and development wells were completed in the inland lower 48 states and 3.0 net development wells were completed offshore in the Pacific. Tight gas development continues in the Piceance Basin of Colorado. Participation in Alaska production and development continued and a total of 14.6 net development wells were drilled. On Alaska's North Slope, activity continued on the Western Region Development Project (primarily the Orion field) with development drilling and engineering design for facility expansions.

ExxonMobil's net acreage in the Gulf of Mexico at year-end 2006 was 2.4 million acres. A total of 10.9 net exploration and development wells were completed during the year. Installation and commissioning of the semi-submersible production and drilling vessel continued for the Thunder Horse development in 2006. Startup, delayed due to a listing incident and subsea manifolds that failed during testing, is anticipated to occur in 2008.

# CANADA

ExxonMobil's year-end 2006 acreage holdings totaled 6.9 million net acres, of which 3.1 million net acres were offshore. A total of 375.0 net exploration and development wells were completed during the year. In eastern Canada, work continued on the Sable Compression project. Hook-up and commissioning of the compression platform was completed at Sable in the fourth quarter of 2006.

# **EUROPE**

# France

ExxonMobil divested its oil and gas exploration and production assets in 2006.

#### Germany

A total of 2.3 million net onshore acres and 0.1 million net offshore acres were held by ExxonMobil at year-end 2006, with 4.6 net development and exploration wells drilled during the year.

### Netherlands

ExxonMobil's net interest in licenses totaled approximately 1.8 million acres at year-end 2006, 1.5 million acres onshore and 0.3 million acres offshore. A total of 3.6 net exploration and development wells were completed during the year. The offshore K17-FA field started up. The multi-year onshore

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project to renovate production clusters, install new compression to maintain capacity and extend field life continued.

Norway

ExxonMobil's net interest in licenses at year-end 2006 totaled approximately 0.8 million acres, all offshore. ExxonMobil participated in 9.3 net exploration and development well completions in 2006. Production was initiated at Ringhorne East in March and Fram East in October. The Ormen Lange, Statfjord Late Life, Skarv, Volve, Tyrihans and Njord Gas Export projects are in progress.

United Kingdom

ExxonMobil's net interest in licenses at year-end 2006 totaled approximately 1.9 million acres, all offshore. A total of 12.1 net exploration and development wells were completed during the year. The Cutter and Merganser projects commenced production during 2006. Other projects progressed in 2006 include Caravel and Starling.

AFRICA

Angola

ExxonMobil's year-end 2006 acreage holdings totaled 0.7 million net offshore acres and 9.2 net exploration and development wells were completed during the year. On Block 15, development drilling continued on Kizomba A and Kizomba B. Development construction continued on the Marimba North project, which will tie-back to the Kizomba A FPSO. Planning for the Kizomba C development concluded and construction is fully underway. A block-wide 4D seismic acquisition program concluded at mid-year. On Block 17, the Dalia project started-up in December. Construction and development activities continued on the Rosa project.

Cameroon

ExxonMobil's acreage totaled 0.3 million net offshore acres at year-end 2006.

Chad

ExxonMobil's net year-end 2006 acreage holdings consisted of 3.3 million onshore acres, with 32.8 net exploration and development wells completed during the year. Production began from the Moundouli field.

Equatorial Guinea

ExxonMobil's acreage totaled 0.3 million net offshore acres at year-end 2006, with 8.3 net development wells completed during the year.

Nigeria

ExxonMobil's net acreage totaled 1.3 million offshore acres at year-end 2006, with 21.5 net exploration and development wells completed during the year. Several major project start-ups were executed in the year. The Yoho field (OML 104) full-field production platform started production in January 2006. The Erha Floating Production, Storage and Offloading (FPSO) vessel commenced production from the deepwater Erha field (OML 133) in March 2006. Production was initiated from the Erha North field (tie-back to the Erha FPSO) in September 2006. The ExxonMobil-operated East

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Area Additional Oil Recovery project started up in January 2006 and pipeline tie-ins continued throughout the year. This project positions Nigerian operations for a significant reduction in flaring in 2007. Detailed design and construction continued on the ExxonMobil-operated East Area Natural Gas Liquids II project. The Amenam-Kpono Phase 2 Gas project started up in late 2006.

# ASIA PACIFIC / MIDDLE EAST

Australia

ExxonMobil's net year-end 2006 acreage holdings totaled 1.4 million acres, all offshore. During 2006, a total of 5.8 net exploration and development wells were drilled.

Indonesia

At year-end 2006, ExxonMobil had 3.9 million net acres, 3.0 million acres offshore and 0.9 million acres onshore. Project activities commenced in mid-2006 on the Banyu Urip development in the Cepu Contract Area after the execution of commercial agreements and approval of the Plan of Development by the government of Indonesia.

Japan

ExxonMobil's net offshore acreage was 36 thousand acres at year-end 2006.

Malaysia

ExxonMobil has interests in production sharing contracts covering 0.5 million net acres offshore Malaysia at year-end 2006. During the year, a total of 4.0 net exploration and development wells were completed. The Guntong E platform, part of the Guntong Hub development, started up in July 2006. Infill drilling wells were successfully completed at the Jerneh-A platform. Drilling activities are currently ongoing at Tabu-B and Angsi-C.

Papua New Guinea

A total of 0.5 million net onshore acres were held by ExxonMobil at year-end 2006, with 1.0 net development well completed during the year.

Qatar

Production and development activities continued on natural gas projects in Qatar. Liquefied natural gas (LNG) operating companies include:

Qatar Liquefied Gas Company Limited - (QG I)

Qatar Liquefied Gas Company Limited (II) - (QG II)

Ras Laffan Liquefied Natural Gas Company Limited - (RL I)

Ras Laffan Liquefied Natural Gas Company Limited (II) - (RL II)

Ras Laffan Liquefied Natural Gas Company Limited (3) — (RL 3)

In addition, ExxonMobil's Al Khaleej Gas (AKG) Phase 1 project supplied pipeline gas to domestic industrial customers. The AKG facilities add sales gas capacity of up to 750 mcfd (millions of cubic feet per day) and produced associated condensate and LPG (Liquid Petroleum Gas). The AKG Phase 2 project is planned to add sales gas capacity of up to 1,250 mcfd, while recovering associated condensate and LPG.

At the end of 2006, 60 (gross) wells supplied natural gas to currently-producing LNG and pipeline gas sales facilities and drilling is underway to complete wells that will supply the new QG II, RL 3 and AKG 2 projects. At year-end 2006, ExxonMobil had 1.1 million net acres, 1.0 million acres onshore and 0.1 million acres offshore. During 2006, 9.9 net development wells were completed.

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Qatar LNG capacity volumes at year-end included 9.7 MTA (millions of metric tons per annum) in QG trains 1-3 and a combined 20.7 MTA in RL I trains 1-2 and RL II trains 3-5. In November 2006 production commenced at RL II train 5, although offshore facilities were not completed at year-end 2006. Construction of QG II trains 4-5 will add planned capacity of 15.6 MTA when complete. In addition, construction of RL 3 trains 6-7 will add planned capacity of 15.6 MTA when complete.

The conversion factor to translate Qatar LNG volumes (millions of metric tons – MT) into gas volumes (billions of cubic feet – BCF) is dependent on the gas quality and the quality of the LNG produced. The conversion factors are approximately 46 BCF/MT for QG I trains 1-3, RL I trains 1-2, RL II train 3, and approximately 49 BCF/MT for QG II trains 4-5, RL II trains 4-5, and RL 3 trains 6-7.

Republic of Yemen

ExxonMobil's net acreage in the Republic of Yemen production sharing areas totaled 10 thousand acres onshore at year-end 2006.

Thailand

ExxonMobil's net onshore acreage in Thailand concessions totaled 21 thousand acres at year-end 2006.

United Arab Emirates

In 2006, ExxonMobil acquired a 28 percent equity in the offshore Upper Zakum oil concession. The concession ends on March 9, 2026.

ExxonMobil's net acreage in the Abu Dhabi oil concessions was 0.6 million acres at year-end 2006, 0.4 million acres onshore and 0.2 million acres offshore. During the year, a total of 6.4 net development and exploration wells were completed. The Northeast Bab Phase 1 new field development project was completed successfully.

### RUSSIA / CASPIAN

Azerbaijan

At year-end 2006, ExxonMobil's net acreage, located in the Caspian Sea offshore of Azerbaijan, totaled 60 thousand acres. At the Azeri-Chirag-Gunashli (ACG) field, 1.0 net development well was completed and production ramp-up continued. The second phase of full field development was initiated with the start-up of West Azeri in January 2006 followed by East Azeri in November 2006 with full-field oil production increased to 660 thousand barrels of oil per day (gross) by year-end. Seventy percent of the construction on the Phase 3 Deep Water Gunashli Project was complete at year-end, with production start up anticipated in 2008.

### Kazakhstan

ExxonMobil's net acreage totaled 0.2 million acres onshore and 0.2 million acres offshore at year-end 2006, with 1.4 net exploration and development wells completed during 2006. At Tengiz, construction of the 285 thousand barrels of oil per day (gross) expansion project continued through 2006. Engineering and construction of the initial phase of the Kashagan field continued during 2006.

Russia

ExxonMobil's net acreage holdings at year-end 2006 were 0.1 million acres, all offshore. A total of 3.0 net development wells were completed in the Chayvo field during the year. Production from the

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field began in October 2005 through an early production system for domestic Russian oil and gas sales and continued through the third quarter 2006. Full-field production with crude oil export and domestic gas sales began in the fourth quarter 2006 and drilling activities are continuing. Phase 1 facilities include an offshore platform, onshore drill site for extended-reach drilling to offshore oil zones, an onshore processing plant, an oil pipeline from Sakhalin Island to the Russian mainland, a mainland terminal and an offshore loading buoy for shipment of oil by tanker.

# SOUTH AMERICA

Argentina

ExxonMobil's net acreage totaled 0.2 million onshore acres at year-end 2006, and there were 1.9 net development wells completed during the year.

Venezuela

ExxonMobil's net year-end 2006 acreage holdings totaled 0.1 million onshore acres.

### WORLDWIDE EXPLORATION

At year-end 2006, exploration activities were underway in several areas in which ExxonMobil has no established production operations and thus are not included above. A total of 37.4 million net acres were held at year-end 2006, and 2.0 net exploration wells were completed during the year in these countries.

# Information with regard to mining activities follows:

Syncrude Operations

Syncrude is a joint-venture established to recover shallow deposits of oil sands using open-pit mining methods, to extract the crude bitumen, and to produce a high-quality, light (32 degree API), sweet, synthetic crude oil. The Syncrude operation, located near Fort McMurray, Alberta, Canada, exploits a portion of the Athabasca Oil Sands Deposit. The location is readily accessible by public road. The produced synthetic crude oil is shipped from the Syncrude site to Edmonton, Alberta by Alberta Oil Sands Pipeline Ltd. Since start-up in 1978, Syncrude has produced about 1.7 billion barrels of synthetic crude oil. Imperial Oil Limited is the owner of a 25 percent interest in the joint-venture. Exxon Mobil Corporation has a 69.6 percent interest in Imperial Oil Limited.

# Operating License and Leases

Syncrude has an operating license issued by the Province of Alberta which is effective until 2035. This license permits Syncrude to mine oil sands and produce synthetic crude oil from approved development areas on oil sands leases. Syncrude holds eight oil sands leases covering approximately 248,300 acres in the Athabasca Oil Sands Deposit which were issued by the Province of Alberta. The leases are automatically renewable as long as oil sands operations are ongoing or the leases are part of an approved development plan. Syncrude leases 10, 12, 17, 22 and 34 (containing proven reserves) and leases 29, 30 and 31 (containing no proven reserves) are included within a development plan approved by the Province of Alberta. There were no known previous commercial operations on these leases prior to the start-up of operations in 1978.

# Operations, Plant and Equipment

Operations at Syncrude involve three main processes: open pit mining, extraction of crude bitumen and upgrading of crude bitumen into synthetic crude oil. The Base mine (lease 17) has now

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been mined out and only remnants are now being removed using trucks and shovels. In the North mine (leases 17 and 22) and in the Aurora mine (leases 10, 12 and 34), truck, shovel and hydrotransport systems are used. Production from the Aurora mine commenced in 2000. The extraction facilities, which separate crude bitumen from sand, are capable of processing approximately 740,000 tons of oil sands a day, producing 150 million barrels of crude bitumen a year. This represents recovery capability of about 93 percent of the crude bitumen contained in the mined oil sands.

Crude bitumen extracted from oil sands is refined to a marketable hydrocarbon product through a combination of carbon removal in three large, high-temperature, fluid-coking vessels and by hydrogen addition in high-temperature, high-pressure, hydrocracking vessels. These processes remove carbon and sulfur and reformulate the crude into a low viscosity, low sulfur, high-quality synthetic crude oil product. In 2006, this upgrading process yielded 0.849 barrels of synthetic crude oil per barrel of crude bitumen. In 2006 about 44 percent of the synthetic crude oil was processed by Edmonton area refineries and the remaining 56 percent was pipelined to refineries in eastern Canada and exported, primarily to the United States. Electricity is provided to Syncrude by a 270 megawatt electricity generating plant and a 160 megawatt electricity generating plant, both located at Syncrude. The generating plants are owned by the Syncrude participants. Recycled water is the primary water source, and incremental raw water is drawn, under license, from the Athabasca River. Imperial Oil Limited's 25 percent share of net investment in plant, property and equipment, including surface mining facilities, transportation equipment and upgrading facilities was about \$2.9 billion at year-end 2006.

### Synthetic Crude Oil Reserves

The crude bitumen is contained within the unconsolidated sands of the McMurray Formation. Ore bodies are buried beneath 50 to 150 feet of overburden, have bitumen grades ranging from 4 to 14 weight percent and ore thickness of 115 to 160 feet. Estimates of synthetic crude oil reserves are based on detailed geological and engineering assessments of in-place crude bitumen volume, the mining plan, extraction recovery and upgrading yield factors, installed plant operating capacity and operating approval limits. The in-place volume, depth and grade are established through extensive and closely spaced core drilling. In active mining areas, the approximate well spacing is 400 feet (150 wells per section) and in future mining areas, the well spacing is approximately 1,150 feet (20 wells per section). Proven reserves include the operating Base and North mines and the Aurora mine. In accordance with the approved mining plan, there are an estimated 1,845 million tons of extractable oil sands in the Base and North mines, with an average bitumen grade of 10.6 weight percent. In addition, at the Aurora mine, there are an estimated 4,580 million tons of extractable oil sands at an average bitumen grade of 11.2 weight percent. After deducting royalties payable to the Province of Alberta, Imperial Oil Limited estimates that its 25 percent net share of proven reserves at year-end 2006 was equivalent to 718 million barrels of synthetic crude oil. Imperial's reserve assessment uses a 6 percent and 7 percent bitumen grade cut-off for the North mine and Aurora mine respectively, a 90 percent overall extraction recovery, a 97 percent mining dilution factor and an 88 percent upgrading yield.

In 2001, the Syncrude owners endorsed a further development of the Syncrude resource in the area and expansion of the upgrading facilities. The Syncrude Aurora 2 and Upgrader Expansion 1 project adds a remote mining train and expands the central processing and upgrading plant. This increased upgrading capacity came on stream in 2006 and increased production capacity to 355 thousand barrels of synthetic crude oil per day (gross). Additional mining trains in the North mine and Aurora mine were also completed in 2005. There are no approved plans for major future expansion projects.

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# ExxonMobil Share of Net Proven Syncrude Reserves(1)

	S	Synthetic Crude Oil				
	Base Mine and North Mine	Aurora Mine	Total			
		millions of barrels)	_			
January 1, 2006	208	530	738			
Revision of previous estimate	_	1	1			
Production	(9)	(12)	(21)			
December 31, 2006	199	519	718			

(1) Net reserves are the company's share of reserves after deducting royalties payable to the Province of Alberta.

# Syncrude Operating Statistics (total operation)

	2006	2005	2004	2003	2002
Operating Statistics Total mined overburden (millions of cubic yards)(1) Mined overburden to oil sands ratio(1)	128.2 1.18	97.1 1.02	100.3	109.2	102.0
Oil sands mined (millions of tons) Average bitumen grade (weight percent)	195.5 11.4	168.0 11.1	188.0 11.1	168.0 11.0	172.1 11.2
Crude bitumen in mined oil sands (millions of tons) Average extraction recovery (percent)	22.2 90.3	18.6 89.1	20.9 87.3	18.5 88.6	19.2 89.9
Crude bitumen production (millions of barrels)(2) Average upgrading yield (percent)	111.6 84.9	94.2 85.3	103.3 85.5	92.3 86.0	97.8 86.3
Gross synthetic crude oil produced (millions of barrels)	95.5	79.3	88.4	78.4	84.8
ExxonMobil net share (millions of barrels)(3)	21	19	22	19	21

(1) Includes pre-stripping of mine areas and reclamation volumes.

(2) Crude bitumen production is equal to crude bitumen in mined oil sands multiplied by the average extraction recovery and the appropriate conversion factor.

(3) Reflects ExxonMobil's 25 percent interest in production less applicable royalties payable to the Province of Alberta.

### Item 3. Legal Proceedings.

As previously reported, the Puerto Rican Environmental Quality Board ("EQB") issued an order on May 21, 2001, alleging that Esso Standard Oil Company (Puerto Rico) ("Esso") failed to investigate and remediate alleged hydrocarbon contamination associated with underground storage tanks at a service station in Barranquitas, Puerto Rico. The EQB sought a penalty of \$75.9 million. Esso filed a federal law suit challenging the constitutionality of the procedures used in the EQB administrative process related to the penalty assessment. In March 2005, the federal District Court in the suit concluded that the EQB proceeding was impermissibly biased against Esso and issued a preliminary injunction prohibiting the EQB from continuing its penalty hearing or imposing the \$75.9 million penalty on Esso. On November 7, 2006, after granting Esso's motion for summary judgment, the District Court issued a permanent injunction that similarly prohibits EQB actions with respect to the penalty proceeding. The EQB may appeal this decision.

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As previously disclosed, the New York State Department of Environmental Conservation ("NYSDEC") issued a Notice of Hearing and complaint on March 24, 2004, alleging that ExxonMobil Oil Corporation in whole or in part is responsible for a discharge of 17 million gallons of petroleum prior to 1978 in connection with past operations at its Brooklyn terminal. The NYSDEC also alleged that the Brooklyn terminal had numerous spills after 1978, in violation of New York Navigation Law. The NYSDEC sought natural resource damages. On June 19, 2006, the NYSDEC referred the matter to the New York State Attorney General ("AG"). On November 30, 2006, the NYSDEC advised the Administrative Law Judge that it was withdrawing the pending administrative enforcement case, without prejudice. On February 8, 2007, the AG issued two notices of intent to sue ExxonMobil in connection with its remedial activities at the Brooklyn terminal site. The first notice relates to alleged violations under the Clean Water Act. The State indicates it will seek civil penalties and injunctive relief for allegedly ongoing, unpermitted discharges of pollutants by the company into Newtown Creek. The second notice relates to alleged violations of the Resource Conservation and Recovery Act (RCRA) as a result of solid or hazardous waste contamination of soils, groundwater, and the surface waters and sediments of Newtown Creek. This notice names ExxonMobil and four unrelated entities as potential parties and indicates the State is seeking injunctive relief.

In another previously reported matter, Mobil Pipe Line Company ("Mobil") agreed in January 2007 to sign a Consent Assessment of Civil Penalty issued by the Pennsylvania Department of Environmental Protection ("PDEP") on May 11, 2006, pursuant to the Pennsylvania Clean Streams Law. This Consent Assessment resolves PDEP's allegations that Mobil discharged gasoline into the soil and groundwater in South Whitehall Township, Pennsylvania. The release allegedly occurred from a pipeline and also caused a fire beginning on February 1, 2005, and continuing until February 4, 2005. Mobil will pay a combined civil penalty and cost reimbursement amount of \$122,000. This is full and final resolution of any existing or potential liability of Mobil to the PDEP for the incident at issue.

Regarding a previously disclosed matter, on January 26, 2007, ExxonMobil Oil Corporation and California's Department of Toxic Substances Control ("DTSC") signed a Consent Order settling allegations made by the DTSC in a Summary of Violations issued to the Torrance Refinery in December 2003. The DTSC had alleged that the refinery had discharged wastewater containing soluble selenium above one part per million to the sewer that leads to the county treatment facility in violation of California hazardous waste rules. The Consent Order calls for the refinery to comply with the hazardous waste regulations as they relate to its discharge into the sewer of wastewater containing selenium and calls for the following payments totaling \$650,000: administrative penalty - \$350,000; supplemental environmental project - \$150,000; reimbursement of DTSC costs - \$100,000; and payment to the Western States Project Training Fund - \$50,000.

Refer to the relevant portions of "Note 15: Litigation and Other Contingencies" of the Financial Section of this report for additional information on legal proceedings.

Item 4. Submission of Matters to a Vote of Security Holders.

None.

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Executive Officers of the Registrant [pursuant to Instruction 3 to Regulation S-K, Item 401(b)].

Name	Age as of March 1, 2007	Title (Held Office Since)
R. W. Tillerson	54	Chairman of the Board (2006)
D. D. Humphreys	59	Senior Vice President (2006) and Treasurer (2004)
S. R. McGill	64	Senior Vice President (2004)
J. S. Simon	63	Senior Vice President (2004)
M. W. Albers	50	President, ExxonMobil Development Company (2004)
A. T. Cejka	55	Vice President (2004)
H. R. Cramer	56	Vice President (1999)
M. J. Dolan	53	Vice President (2004)
M. E. Foster	63	Vice President (2004)
H. H. Hubble	54	Vice President-Investor Relations and Secretary (2004)
G. L. Kohlenberger	54	Vice President (2002)
C. W. Matthews	62	Vice President and General Counsel (1995)
P. T. Mulva	55	Vice President and Controller (2004)
S. D. Pryor	57	Vice President (2004)
P. E. Sullivan	63	Vice President and General Tax Counsel (1995)
A. P. Swiger	50	Vice President (2006)

For at least the past five years, Messrs. Cramer, Humphreys, Kohlenberger, Matthews, McGill, Simon, Sullivan and Tillerson have been employed as executives of the registrant. Mr. Tillerson was a Senior Vice President and then President, a title he continues to hold, before becoming Chairman of the Board. Mr. Humphreys was Vice President and Controller and then Vice President and Treasurer before becoming Senior Vice President and Treasurer. Mr. McGill was President of ExxonMobil Production Company before becoming Senior Vice President. Mr. Simon was President of ExxonMobil Refining & Supply Company before becoming Senior Vice President—Investor Relations and Secretary before becoming Vice President and Controller.

The following executive officers of the registrant have also served as executives of the subsidiaries, affiliates or divisions of the registrant shown opposite their names during the five years preceding December 31, 2006.

Esso Exploration and Production Chad Inc.	Albers and Swiger
Exxon Azerbaijan Caspian Sea Limited	Swiger
Exxon Azerbaijan Limited	Swiger
ExxonMobil Chemical Company	Dolan and Pryor
ExxonMobil Development Company	Albers and Foster
ExxonMobil Exploration Company	Cejka
ExxonMobil Fuels Marketing Company	Cramer
ExxonMobil Gas & Power Marketing Company	Swiger
ExxonMobil Lubricants & Petroleum Specialties Company	Kohlenberger
ExxonMobil Production Company	Foster and Swiger
ExxonMobil Refining & Supply Company	Dolan, Hubble and Pryor
ExxonMobil Saudi Arabia	Dolan
Imperial Oil Limited	Mulva

Officers are generally elected by the Board of Directors at its meeting on the day of each annual election of directors, with each such officer serving until a successor has been elected and qualified.

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# PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.
Reference is made to the "Quarterly Information" portion of the Financial Section of this report.

Issuer Purchases of Equity Securities for Quarter Ended December 31, 2006							
Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs			
October, 2006	40,782,542	68.67	40,782,542				
November, 2006	37,276,243	73.33	37,276,243				
December, 2006	36,773,679	76.59	36,773,679				
Total	114,832,464	72.72	114,832,464	(See note 1)			

Note 1—On August 1, 2000, the Corporation announced its intention to resume purchases of shares of its common stock for the treasury both to offset shares issued in conjunction with company benefit plans and programs and to gradually reduce the number of shares outstanding. The announcement did not specify an amount or expiration date. The Corporation has continued to purchase shares since this announcement and to report purchased volumes in its quarterly earnings releases. Purchases may be made in both the open market and through negotiated transactions, and purchases may be increased, decreased or discontinued at any time without prior notice.

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### Item 6. Selected Financial Data.

AND THE CONTRACTOR OF THE CONT	Years Ended December 31,									
	2006 2005		2004		2003		03 200			
Sales and other operating revenue(1)(2)  (1) Sales-based taxes included.  (2) Includes amounts for purchases/sales contracts with the same counterparty for 2002-20	\$	365,467 30,381		358,955 30,742		except per 291,252 27,263		re amounts 237,054 23,855		200,949
Net income Income from continuing operations Discontinued operations, net of income tax Cumulative effect of accounting change, net of income tax	\$	39,500 —	\$	36,130 —	\$	25,330 —	S	20,960	\$	11,011 449
Net income	\$	39,500	\$	36,130	S	25,330	\$	21,510	\$	11,460
Net income per common share Income from continuing operations Discontinued operations, net of income tax Cumulative effect of accounting change, net of income tax	s	6.68	\$	5,76	s	3.91	\$	3.16 — 0.08	\$	1.62
Net income	8	6.68	\$	5.76	\$	3.91	\$	3.24	\$	1.69
Net income per common share - assuming dilution Income from continuing operations Discontinued operations, net of income tax Cumulative effect of accounting change, net of income tax	\$	6.62	\$	5.71	\$	3.89	\$	3.15	\$	1.61 0.07
Net income	\$	6.62	\$	5.71	\$	3.89	\$	3.23	\$	1.68
Cash dividends per common share	\$	1.28	\$	1.14	\$	1.06	\$	0.98	\$	0.92
Total assets	\$	219,015	\$	208,335	\$	195,256	\$	174,278	\$	152,644
Long-term debt	\$	6,645	\$	6,220	\$	5,013	\$	4,756	\$	6,655

# Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Reference is made to the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Financial Section of this report.

### Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Reference is made to the section entitled "Market Risks, Inflation and Other Uncertainties", excluding the part entitled "Inflation and Other Uncertainties," in the Financial Section of this report. All statements other than historical information incorporated in this Item 7A are forward-looking statements. The actual impact of future market changes could differ materially due to, among other things, factors discussed in this report.

# Item 8. Financial Statements and Supplementary Data.

Reference is made to the following in the Financial Section of this report:

- Consolidated financial statements, together with the report thereon of PricewaterhouseCoopers LLP dated February 28, 2007, beginning with the section entitled "Report of Independent Registered Public Accounting Firm" and continuing through "Note 18: Income, Sales-Based and Other Taxes;"
- · "Quarterly Information" (unaudited);

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- · "Supplemental Information on Oil and Gas Exploration and Production Activities" (unaudited); and
- · "Frequently Used Terms" (unaudited).

Financial Statement Schedules have been omitted because they are not applicable or the required information is shown in the consolidated financial statements or notes thereto.

# Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

# Item 9A. Controls and Procedures.

Management's Evaluation of Disclosure Controls and Procedures

As indicated in the certifications in Exhibit 31 of this report, the Corporation's chief executive officer, principal financial officer and principal accounting officer have evaluated the Corporation's disclosure controls and procedures as of December 31, 2006. Based on that evaluation, these officers have concluded that the Corporation's disclosure controls and procedures are effective in ensuring that material information required to be in this annual report is accumulated and communicated to them on a timely basis.

# Management's Report on Internal Control over Financial Reporting

Management, including the Corporation's chief executive officer, principal financial officer and principal accounting officer, is responsible for establishing and maintaining adequate internal control over the Corporation's financial reporting. Management conducted an evaluation of the effectiveness of internal control over financial reporting based on the Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that Exxon Mobil Corporation's internal control over financial reporting was effective as of December 31, 2006.

Management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2006, was audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report included in the Financial Section of this report.

# Changes in Internal Control over Financial Reporting

There were no changes during the Corporation's last fiscal quarter that materially affected, or are reasonably likely to materially affect the Corporation's internal control over financial reporting.

# Item 9B. Other Information.

None.

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#### PART III

# Item 10. Directors, Executive Officers and Corporate Governance.

Incorporated by reference to the following from the registrant's definitive proxy statement for the 2007 annual meeting of shareholders (the "2007 Proxy Statement"):

- · The section entitled "Election of Directors";
- The portion entitled "Section 16(a) Beneficial Ownership Reporting Compliance" of the section entitled "Executive Compensation Tables";
- . The portion entitled "Code of Ethics and Business Conduct" of the section entitled "Corporate Governance"; and
- The "Audit Committee" portion and the membership table of the portion entitled "Board Meetings and Committees; Annual Meeting Attendance" of the section entitled "Corporate Governance".

# Item 11. Executive Compensation.

Incorporated by reference to the sections entitled "Director Compensation," "Compensation Committee Report," "Compensation Discussion and Analysis" and "Executive Compensation Tables" of the registrant's 2007 Proxy Statement.

# Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required under Item 403 of Regulation S-K is incorporated by reference to the section entitled "Director and Executive Officer Stock Ownership" of the registrant's 2007 Proxy Statement.

Equity Compensation Plan Information							
Plan Category	(a)  Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted- Average Exercise Price of Outstanding Options, Warrants and Rights (1)	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans [Excluding Securities Reflected in Column (a)]				
Equity compensation plans approved by security holders	104,121,419 (2)(3)	\$40.18(3)	180,608,026(3)(4)(5)				
Equity compensation plans not approved by security holders	0	0	0				
Total	104,121,419	\$40.18	180,608,026				

- (1) The exercise price of each option reflected in this table is equal to the fair market value of the Company's common stock on the date the option was granted. The weighted-average price reflects six prior option grants that are still outstanding.
- (2) Includes 97,034,844 options granted under the 1993 Incentive Program and 7,086,575 restricted stock units to be settled in shares.
- (3) Does not include options that ExxonMobil assumed in the 1999 merger with Mobil. At year-end 2006, the number of securities to be issued upon exercise of outstanding options under Mobil plans was 13,452,414, and the weighted-average exercise price of such options was \$29,36. No additional awards may be made under those plans.
- (4) Available shares can be granted in the form of restricted stock, options, or other stock-based awards. Includes 179,704,826 shares available for award under the 2003 Incentive Program and 903,200 shares available for award under the 2004 Non-Employee Director Restricted Stock Plan.

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(5) Under the 2004 Non-Employee Director Restricted Stock Plan approved by shareholders in May 2004, and the related standing resolution adopted by the Board, each non-employee director automatically receives 8,000 shares of restricted stock when first elected to the Board and, if the director remains in office, an additional 4,000 restricted shares each following year. While on the Board, each non-employee director receives the same cash dividends on restricted shares as a holder of regular common stock, but the director is not allowed to sell the shares. The restricted shares can be forfeited if the director leaves the Board early.

# Item 13. Certain Relationships and Related Transactions, and Director Independence.

The registrant has concluded that it has no disclosable matters under Item 404(a) of Regulation S-K. Additional information required under this Item 13 is incorporated by reference to the portions entitled "Related Person Transactions and Procedures" and "Director Independence" of the section entitled "Corporate Governance" in the registrant's 2007 Proxy Statement.

# Item 14. Principal Accounting Fees and Services.

Incorporated by reference to the section entitled "Ratification of Independent Auditors" and the portion entitled "Audit Committee" of the section entitled "Corporate Governance" of the registrant's 2007 Proxy Statement.

### PART IV

### Item 15. Exhibits, Financial Statement Schedules.

- (a) (1) and (2) Financial Statements:
   See Table of Contents of the Financial Section of this report.
- (a) (3) Exhibits:See Index to Exhibits of this report.

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# BUSINESS PROFILE

		gs After e Taxes		e Capital oloyed	Retur Average Empl	Capital	Explo	al and ration ditures
Financial	2006	2005	2006	2005	2006	2005	2006	2005
Upstream	-	(million	s of dollars)		(perc	ent)	(millions	of dollars)
United States Non-U.S.	\$ 5,168 21,062	\$ 6,200 18,149	\$ 13,940 43,931	\$ 13,491 39,770	37.1 47.9	46.0 45.6		\$ 2,142 12,328
Total	\$26,230	\$24,349	\$ 57,871	\$ 53,261	45.3	45.7	\$16,231	\$14,470
Downstream United States Non-U.S.	\$ 4,250 4,204	\$ 3,911 4,081	\$ 6,456 17,172		65.8 24.5	58.8 22.6	\$ 824 1,905	\$ 753 1,742
Total	\$ 8,454	\$ 7,992	\$ 23,628	\$ 24,680	35.8	32.4	\$ 2,729	\$ 2,495
Chemical United States Non-U.S.	\$ 1,360 3,022	\$ 1,186 2,757	\$ 4,911 8,272	\$ 5,145 8,919	27.7 36.5	23.1 30.9	\$ 280 476	
Total	\$ 4,382	\$ 3,943	\$ 13,183	\$ 14,064	33.2	28,0	\$ 756	\$ 654
Corporate and financing	434	(154)	27,891	24,956	_	-	139	80
Total	\$39,500	\$36,130	\$122,573	\$116,961	32.2	31.3	\$19,855	\$17,699

See Frequently Used Terms for a definition and calculation of capital employed and return on average capital employed.

Operating	2006	2005
	(thousan	ds of barrels daily)
Net liquids production		
United States	414	477
Non-U.S.	2,267	2,046
Total	2,681	2,523
Natural gas production available for sale	(millions	of cubic feet daily)
	1 262	1.720
United States	1,625	1,739
Non-U.S.	7,709	7,512
Total	9,334	9,251
	(thousands of oil	l-equivalent barrels daily)
Oil-equivalent production (1)	4,237	4,065
Petroleum product sales (2)	(thousand	ds of barrels daily)
United States	2,729	2,822
Non-U.S.	4,518	4,697
Total	7,247	7,519

PoGthus-show	(thousands of barre	els daily)
Refinery throughput United States	1,760	1,794
Non-U.S.	3,843	3,929
Total	5,603	5,723
	(thousands of meta	ric tons)
Chemical prime product sales	10,703	10,369
United States Non-U.S.	16,647	16,408
Total	27,350	26,777

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Gas converted to oil-equivalent at 6 million cubic feet = 1 thousand barrels.
 Petroleum product sales data is reported net of purchases/sales contracts with the same counterparty.

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# FINANCIAL SUMMARY

			2006		2005		2004		2003		2002
Sales and	other operating revenue (1) (2)	5					, except per 291,252				200,949
Dow Che Con	tream vnstream mical porate and financing ger-related expenses	S	26,230 8,454 4,382 434		24,349 7,992 3,943 (154)		16,675 5,706 3,428 (479)		14,502 3,516 1,432 1,510	\$	9,598 1,300 830 (442) (275)
Disc	om continuing operations continued operations ounting change	S	39,500 —	\$	36,130	\$	25,330	\$	20,960	s	11,011 449
Net	income	\$	39,500	\$	36,130	\$	25,330	\$	21,510	\$	11,460
	e per common share me from continuing operations	\$	6.68	5	5.76	s	3.91	S	3.16	\$	1.62
Inco Disc	e per common share – assuming dilution me from continuing operations ontinued operations, net of income tax sulative effect of accounting change, net of income tax	\$	6.62 	\$	5.71 	\$	3.89	\$	3.15 	\$	1.61 0.07
Neti	income	8	6.62	\$	5.71	\$	3.89	\$	3.23	\$	1.68
Cash divid	ends per common share	\$	1.28	\$	1.14	\$	1.06	\$	0.98	\$	0.92
Net income	e to average shareholders' equity (percent)		35.1		33.9		26.4		26.2		15.5
Working ca Ratio of cu	apital urrent assets to current liabilities	S	26,960 1.55	\$	27,035 1.58	\$	17,396 1.40	\$	7,574 1.20	\$	5,116 1.15
	to property, plant and equipment lant and equipment, less allowances s	\$	113,687	\$	107,010	\$	11,986 108,639 195,256	\$	104,965	\$	94,940
	n expenses, including dry holes nd development costs	\$ \$	1,181 733		964 712			\$	1,010 618		920 631
Debt to cap	debt ge coverage ratio (times) oital (percent) capital (percent) (3)	\$	6,645 8,347 46.3 6.6 (20.4)	\$		\$		\$	4,756 9,545 30.8 9.3 (1.2)	\$	6,655 10,748 13.8 12.2 4.4
Shareholde	rs' equity at year end rs' equity per common share verage number of common shares outstanding (millions)	\$	13,844 19.87 5,913		111,186 18.13 6,266		101,756 15.90 6,482		89,915 13.69 6,634		74,597 11.13 6,753
	regular employees at year end (thousands) (4)		82.1		83.7		85.9		88.3		92.5
CORS emp	loyees not included above (thousands) (5)		24.3		22,4		19.3		17.4		16.8

⁽¹⁾ Sales and other operating revenue includes sales-based taxes of \$30,381 million for 2006, \$30,742 million for 2005, \$27,263 million for 2004, \$23,855 million for 2003 and \$22,040 million for 2002.

⁽²⁾ Sales and other operating revenue includes \$30,810 million for 2005, \$25,289 million for 2004, \$20,936 million for 2003 and \$18,150 million for 2002 for purchases/sales contracts with the same counterparty. Associated costs were included in Crude oil

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and product purchases. Effective January 1, 2006, these purchases/sales were recorded on a net basis with no resulting impact on net income. See note 1, Summary of Accounting Policies.

- (3) Debt net of cash, excluding restricted cash. The ratio of net debt to capital including restricted cash is (26.3) percent for 2006.
- (4) Regular employees are defined as active executive, management, professional, technical and wage employees who workfull time or part time for the Corporation and are covered by the Corporation's benefit plans and programs.
- (5) CORS employees are employees of company-operated retail sites.

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### FREQUENTLY USED TERMS

Listed below are definitions of several of ExxonMobil's key business and financial performance measures. These definitions are provided to facilitate understanding of the terms and their calculation.

# CASH FLOW FROM OPERATIONS AND ASSET SALES

Cash flow from operations and asset sales is the sum of the net cash provided by operating activities and proceeds from sales of subsidiaries, investments and property, plant and equipment from the Consolidated Statement of Cash Flows. This cash flow is the total sources of cash from both operating the Corporation's assets and from the divesting of assets. The Corporation employs a long-standing and regular disciplined review process to ensure that all assets are contributing to the Corporation's strategic and financial objectives. Assets are divested when they are no longer meeting these objectives or are worth considerably more to others. Because of the regular nature of this activity, we believe it is useful for investors to consider sales proceeds together with cash provided by operating activities when evaluating cash available for investment in the business and financing activities, including shareholder distributions.

Cash flow from operations and asset sales	2006	2005	2004
	(millions of dollars)		
Net cash provided by operating activities	\$49,286	\$48,138	\$40,551
Sales of subsidiaries, investments and property, plant and equipment	3,080	6,036	2,754
Cash flow from operations and asset sales	\$52,366	\$54,174	\$43,305
and the state of t			

# CAPITAL EMPLOYED

Capital employed is a measure of net investment. When viewed from the perspective of how the capital is used by the businesses, it includes ExxonMobil's net share of property, plant and equipment and other assets less liabilities, excluding both short-term and long-term debt. When viewed from the perspective of the sources of capital employed in total for the Corporation, it includes ExxonMobil's share of total debt and shareholders' equity. Both of these views include ExxonMobil's share of amounts applicable to equity companies, which the Corporation believes should be included to provide a more comprehensive measure of capital employed.

Capital employed	2006	2005	2004
		nillions of dollar	
Business uses: asset and liability perspective			
Total assets	\$219,015	\$208,335	\$195,256
Less liabilities and minority share of assets and liabilities	4.77		
Total current liabilities excluding notes and loans payable	(47,115)	(44,536)	(39,701)
Total long-term liabilities excluding long-term debt and equity of minority and preferred	No Sec.		
shareholders in affiliated companies	(45,905)	(41,095)	(41,554)
Minority share of assets and liabilities	(4,948)	(4,863)	(5,285)
Add ExxonMobil share of debt-financed equity company net assets	2,808	3,450	3,914
Total capital employed	\$123,855	\$121,291	\$112,630
and applied employed		_	-
Total corporate sources: debt and equity perspective			
Notes and loans payable	\$ 1,702	\$ 1,771	\$ 3,280
Long-term debt	6,645	6,220	5,013
Shareholders' equity	113,844	111,186	101,756
Less minority share of total debt	(1,144)	(1,336)	(1,333)
Add ExxonMobil share of equity company debt	2,808	3,450	3,914
Total capital employed	\$123,855	\$121,291	\$112,630
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# RETURN ON AVERAGE CAPITAL EMPLOYED

Return on average capital employed (ROCE) is a performance measure ratio. From the perspective of the business segments, ROCE is annual business segment earnings divided by average business segment capital employed (average of beginning and end-of-year amounts). These segment earnings include ExxonMobil's share of segment earnings of equity companies, consistent with our capital employed definition, and exclude the cost of financing. The Corporation's total ROCE is net income excluding the after-tax cost of financing, divided by total corporate average capital employed. The Corporation has consistently applied its ROCE definition for many years and views it as the best measure of historical capital productivity in our capital-intensive, long-term industry, both to evaluate management's performance and to demonstrate to shareholders that capital has been used wisely over the long term. Additional measures, which tend to be more cash flow-based, are used to make investment decisions.

Return on average capital employed	2006	2005	2004
Net income	\$ 39,500	(millions of dollars) \$ 36,130	\$ 25,330
Financing costs (after tax)		211	(107)
Third-party debt	44	(1)	(137)
ExxonMobil share of equity companies	(156)	(144)	(185)
All other financing costs – net	191	(295)	54
Total financing costs	79	(440)	(268)
Earnings excluding financing costs	\$ 39,421	\$ 36,570	\$ 25,598
Average capital employed	\$122,573	\$116,961	\$107,339
Return on average capital employed - corporate total	32.2%	31.3%	23.8%

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# QUARTERLY INFORMATION

			2006					2005		
	Firs Quar			Fourth Quarter	Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year
Volumes	-					(5 - 0 V)				
Deduction Ford 19 ( ) 19 ()					thousands of			0.451	2 (20	2 502
Production of crude oil and natural gas liquids	2,6		1001600							2.7
Refinery throughput	5,5							The second second		
Petroleum product sales (1)	7,1	77 7,06	7,302	7,447	7,247	7,494	7,510	7,477	7,592	7,519
				(	millions of c	ubic feet dai	(y)			
Natural gas production available for sale	11,1	75 8,75	8,139	9,301	9,334	10,785	8,709	7,716	9,822	9,251
				thousa	nds of oil-equ	uivalent hari	rels daily)			
Oil-equivalent production (2)	4,5	60 4,16	4,004		the second secon		3,919	3,737	4,266	4,065
					(rhousands o	f metric ton	5)			
Chemical prime product sales	6,9	16 6,85	6,752	48 400 60			The state of the state of	6,955	6,292	26,777
Summarized financial data										
was a second of the second of	2000	a aroleo				of dollars)	20.022	ومعادد	About	111111
Sales and other operating revenue (3) (4)										358,955
Gross profit (5)	17	28 37,668								
Net income	\$ 8,4	00 10,360	10,490	10,250	39,500	\$ 7,860	7,640	9,920	10,710	36,130
Per share data										
						er share)		1747	V 200	E-6-1
Net income per common share	\$ 1.	38 1.74	1.79	1.77	6.68	\$ 1.23	1.21	1.60	1.72	5.76
Net income per common share - assuming										
dilution	\$ 1.	37 1.72	1.77	1.76		1.000	7.15	1.58	1.71	5.71
Dividends per common share	\$ 0.	32 0.32	0.32	0.32	1.28	\$ 0.27	0.29	0.29	0.29	1.14
Common stock prices										
High	\$ 63.	65.00	71.22	79.00	79.00	\$ 64:37	61.74	65.96	63.89	65.96
Low	\$ 56.	12 56.64	61.63	64.84	56.42	\$ 49.25	52.78	57.60	54.50	49.25

⁽¹⁾ Petroleum product sales data is reported net of purchases/sales contracts with the same counterparty.

The price range of ExxonMobil common stock is as reported on the composite tape of the several U.S. exchanges where ExxonMobil common stock is traded. The principal market where ExxonMobil common stock (XOM) is traded is the New York Stock Exchange, although the stock is traded on other exchanges in and outside the United States.

There were 591,226 registered shareholders of ExxonMobil common stock at December 31, 2006. At January 31, 2007, the registered shareholders of ExxonMobil common stock numbered 589,553.

On January 31, 2007, the Corporation declared a \$0.32 dividend per common share, payable March 9, 2007.

⁽²⁾ Gas converted to oil-equivalent at 6 million cubic feet = 1 thousand barrels.

^{(3) 2005} Sales and other operating revenue includes amounts for purchases/sales with the same counterparty. Associated costs were included in Crude oil and product purchases. Effective January 1, 2006, these purchases/sales were recorded on a net basis with no resulting impact on net income. See note 1, Summary of Accounting Policies.

⁽⁴⁾ Includes amounts for sales-based taxes.

⁽⁵⁾ Gross profit equals sales and other operating revenue less estimated costs associated with products sold.

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

FUNCTIONAL EARNINGS		2006	Į,	2005		2004
	-	nillions of de	ollars	, except per si	iare a	mounts)
Net income (U.S. GAAP)						
Upstream				W1002	- 1	V (2734)
United States	\$	5,168	\$	6,200	\$	4,948
Non-U.S.		21,062		18,149		11,727
Downstream				Cy.534		2660
United States		4,250		3,911		2,186
Non-U,S.		4,204		4,081		3,520
Chemical						
United States		1,360		1,186		1,020
Non-U.S.		3,022		2,757		2,408
Corporate and financing	125	434		(154)		(479)
Net income	\$	39,500	\$	36,130	\$	25,330
And the second s	_	* **	6	6.00		3.91
Net income per common share	\$	6.68	\$	5.76	\$	
Net income per common share - assuming dilution	\$	6.62	S	5.71	\$	3.89
Special items included in net income						
Non-U.S. Upstream			- 01	10 326		
Gain on Dutch gas restructuring	\$	_	\$	1,620	\$	-
U.S. Downstream			5	Lifette	1	142,700
Allapattah lawsuit provision	\$	-	\$	(200)	\$	(550)
Non-U.S. Downstream				522		
Sale of Sinopec shares	\$	-	\$	310	\$	-
Non-U.S. Chemical			40	1.0		
Sale of Sinopec shares	\$	-	8	150	\$	-
Joint venture litigation	\$	-	S	390	\$	-
Corporate and financing						
Tax-related benefit	\$	410	\$	-	\$	-

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS FORWARD-LOOKING STATEMENTS

Statements in this discussion regarding expectations, plans and future events or conditions are forward-looking statements. Actual future results, including demand growth and energy source mix; capacity increases; production growth and mix; financing sources; the resolution of contingencies; the effect of changes in prices; interest rates and other market conditions; and environmental and capital expenditures could differ materially depending on a number of factors, such as the outcome of commercial negotiations; changes in the supply of and demand for crude oil, natural gas, and petroleum and petrochemical products; and other factors discussed herein and in Item IA of ExxonMobil's 2006 Form 10-K.

# OVERVIEW

The following discussion and analysis of ExxonMobil's financial results, as well as the accompanying financial statements and related notes to consolidated financial statements to which they refer, are the responsibility of the management of Exxon Mobil Corporation. The Corporation's accounting and financial reporting fairly reflect its straightforward business model involving the extracting, manufacturing and marketing of hydrocarbons and hydrocarbon-based products. The Corporation's business model involves the production (or purchase), manufacture and sale of physical products, and all commercial activities are directly in support of the underlying physical movement of goods. Our consistent, conservative approach to financing the capital-intensive needs of the Corporation has helped ExxonMobil to sustain the "triple-A" status of its long-term debt securities for 88 years.

ExxonMobil, with its resource base, financial strength, disciplined investment approach and technology portfolio, is well-positioned to participate in substantial investments to develop new energy supplies. While commodity prices are volatile on a short-term basis and depend on supply and demand, ExxonMobil's investment decisions are based on our long-term outlook, using a disciplined approach in selecting and pursuing the most attractive investment opportunities. The corporate plan is a fundamental annual management process that is the basis for setting risk-assessed near-term operating and capital objectives in addition to providing the longer-term economic assumptions used for investment evaluation purposes. Volumes are based on individual field production profiles, which are also updated annually. Prices for crude oil, natural gas and refined products are based on corporate plan assumptions developed annually by major region and used for investment evaluation purposes. Potential investment opportunities are tested over a wide range of economic scenarios to establish the resiliency of each opportunity. Once investments are made, a reappraisal process is completed to ensure relevant lessons are learned and improvements are incorporated into future projects. ExxonMobil views return on capital employed as the best measure of capital productivity.

# BUSINESS ENVIRONMENT AND RISK ASSESSMENT

### Long-Term Business Outlook

By 2030, the world's population is expected to grow to 8 billion, approximately 25 percent higher than today's level. Coincident with this population increase, the Corporation expects worldwide economic growth to average just under 3 percent per year. This combination of population and economic growth should lead to a primary energy demand increase of approximately 60 percent by 2030 versus 2000. The vast majority (~80 percent) of the increase is expected to occur in developing countries.

As demand rises, energy efficiency will become increasingly important, with the pace of improvement likely to accelerate. This accelerated pace will probably result from expected improvements in personal transportation and power generation driven by the introduction of new technologies, as well as many other improvements that span the residential, commercial and industrial sectors. Oil, gas and coal are expected to remain the predominant energy sources with approximately 80 percent share of total energy. Oil and gas are expected to maintain close to a 60 percent share. These well-established fuel sources are the only ones with the versatility and scale to meet the majority of the world's growing energy needs. Nuclear power will likely be a growing option to meet electricity needs. Alternative fuels, such as solar and wind power, will grow rapidly, underpinned by government subsidies and mandates. But even with assumptions of robust 10 percent average annual growth, solar and wind are expected to represent just 1 percent of the total energy portfolio by 2030.

Demand for liquid fuels is expected to grow at 1.4 percent per year, primarily due to increasing transportation requirements, especially related to light- and heavy-duty vehicles. The global fleet of light-duty vehicles will increase significantly, with related demand partly offset by improvements in fuel economy. Natural gas and coal are expected to grow at 1.7 and 1.6 percent per year, respectively, driven by increased need for electric power generation. The Corporation expects the liquefied natural gas (LNG) market to increase nearly fourfold by 2030, with LNG imports helping to meet growing demand in Europe, North America and Asia. With equity positions in many of the largest remote gas accumulations in the world, the Corporation is positioned to benefit from its technological advances in gas liquefaction, transportation and regasification that enable distant gas supplies to reach markets economically.

The Corporation expects the world's oil and gas resource base to grow not only from new discoveries, but also from increases to

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known reserves. Technology will underpin these increases. The cost to develop these resources will be significant. According to the International Energy Agency, the investment required to meet total oil and gas energy needs worldwide through 2030 will be about \$300 billion per year, or \$8 trillion (measured in 2005 dollars) in total for 2005-2030.

### Upstream

ExxonMobil continues to maintain a large portfolio of development and exploration opportunities, which enables the Corporation to be selective, optimizing total profitability and mitigating overall political and technical risks. As future development projects bring new production online, the Corporation expects a shift in the geographic mix of its production volumes between now and 2011. Oil and natural gas output from West Africa, the Caspian, the Middle East and Russia is expected to increase over the next five years based on current capital project execution plans. Currently, these growth areas account for 35 percent of the Corporation's production. By 2011, they are expected to generate about 50 percent of total volumes. The remainder of the Corporation's production is expected to be sourced from established areas, including Europe and North America.

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In addition to a changing geographic mix, there will also be a change in the type of opportunities from which volumes are produced. Nonconventional production utilizing specialized technology such as arctic technology, deepwater drilling and production systems, heavy oil recovery processes and LNG is expected to grow from about 30 to 40 percent of the Corporation's output between now and 2011. The Corporation's overall volume capacity outlook, based on projects coming onstream as anticipated, is for production capacity to grow over the period 2007-2011. However, actual volumes will vary from year to year due to timing of individual project start-ups, operational outages, reservoir performance, regulatory changes, asset sales, weather events, price effects under production sharing contracts and other factors described in Item 1A of ExxonMobil's 2006 Form 10-K.

#### Downstream

The downstream industry environment remains very competitive. While refining margins in 2006 were strong, our long-term real inflation-adjusted refining margins have declined at a rate of about 1 percent per year over the past 20 years. The intense competition in the retail fuels market has similarly driven down real margins by about 4 percent per year. Global refining capacity is expected to grow at about 1 to 2 percent per year through 2010 with Asia Pacific expected to grow at more than 3 percent per year. ExxonMobil assets are well-positioned to supply the growing demand for petroleum products and our continuous focus on making our refineries more efficient and productive has resulted in significant capacity increases to help meet growing demand at a fraction of the cost of building a new refinery. Our capacity growth rate over the past 10 years at existing facilities has been the equivalent of building a new average-size refinery every three years.

Refining margins are a function of the difference between what a refinery pays for its raw materials (primarily crude oil) and the market prices for the range of products produced (primarily gasoline, heating oil, jet fuel and fuel oil). Crude oil and many products are widely traded with published prices, including those quoted on multiple exchanges around the world (e.g., New York Mercantile Exchange and International Petroleum Exchange). Prices for these commodities (crude and various products) are determined by the global marketplace and are impacted by many factors, including global and regional supply/demand balances, inventory levels, refinery operations, import/export balances, seasonality and weather and political climate.

The objectives of ExxonMobil's Downstream strategies are to position the Corporation to be the industry leader under a variety of market conditions. These strategies include maintaining best-in-class operations in all aspects of the business, maximizing value from leading-edge technology, capitalizing on integration with other ExxonMobil businesses, and providing high-quality, valued products and services to the Corporation's customers. ExxonMobil has an ownership interest in 40 refineries, located in 20 countries, with distillation capacity of 6.4 million barrels per day and lubricant basestock manufacturing capacity of about 150 thousand barrels per day. ExxonMobil's fuels and lubes marketing business portfolios include operations around the world, serving a globally diverse customer base. World-class scale and integration, industry-leading efficiency, leading-edge technology and respected brands enable ExxonMobil to take advantage of attractive emerging-growth opportunities around the globe.

### Chemical

The strength of the global economy supported strong demand growth for petrochemicals in 2006. Strong economic and industrial production growth fueled increased demand in Asia Pacific, particularly China. North America recovered from the supply disruptions created by hurricanes Katrina and Rita, while European growth was moderate, similar to that of GDP. Overall global supply/demand balances tightened, supporting higher prices and margins despite higher feedstock costs.

ExxonMobil benefited from continued operational excellence, as well as a portfolio of products that includes many of the largest-volume and highest-growth petrochemicals in the global economy. In addition to being a worldwide supplier of primary petrochemical products, ExxonMobil Chemical also has a diverse portfolio of less-cyclical business lines. Chemical's competitive advantages are achieved through its business mix, broad geographic coverage, investment discipline, integration of chemical capacity with large refining complexes or Upstream gas processing, advantaged feedstock capabilities, leading proprietary technology and product application expertise.

# REVIEW OF 2006 AND 2005 RESULTS

Net income (U.S. GAAP)

2006	2005	2004	
(mi	llions of dolla	rs)	
\$ 39,500	\$36,130	\$ 25,330	

#### 2006

Net income in 2006 of \$39,500 million was the highest ever for the Corporation, up \$3,370 million from 2005. Net income for 2006 included a \$410 million gain from the recognition of tax benefits related to historical investments in non-U.S. assets.

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Total assets at December 31, 2006, of \$219 billion increased by approximately \$11 billion from 2005, reflecting strong earnings and the Corporation's active investment program, particularly in the Upstream.

### 2005

Net income in 2005 of \$36,130 million was up \$10,800 million from 2004. Net income in 2005 included special items of \$2,270 million, consisting of a \$1,620 million gain related to the Dutch gas restructuring, a \$460 million gain from the sale of the Corporation's stake in Sinopec, a \$390 million gain from the resolution of joint venture litigation and a charge of \$200 million relating to the Allapattah lawsuit provision. Net income in 2004 included a special charge of \$550 million relating to Allapattah.

Total assets at December 31, 2005, of \$208 billion increased by approximately \$13 billion from 2004, reflecting strong earnings and the Corporation's active investment program, particularly in the Upstream.

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	2006	2005	2004	
Thereses	(mi	(millions of dollars)		
United States Non-U.S.	\$ 5,168 21,062	\$ 6,200 18,149	\$ 4,948 11,727	
Total	\$26,230	\$24,349	\$16,675	

### 2006

Upstream earnings for 2006 totaled \$26,230 million, an increase of \$1,881 million from 2005, including a \$1,620 million gain related to the Dutch gas restructuring in 2005. Higher liquids and natural gas realizations were partly offset by higher operating expenses. Oilequivalent production increased 4 percent versus 2005, including the impact of divestment and entitlement effects. Excluding these impacts, total oil-equivalent production increased by 7 percent. Liquids production of 2,681 kbd (thousands of barrels per day) increased by 158 kbd from 2005. Production increases from new projects in West Africa and increased Abu Dhabi volumes were partly offset by mature field decline, entitlement effects and divestment impacts. Natural gas production of 9,334 mcfd (millions of cubic feet per day) increased 83 mcfd from 2005. Higher volumes from projects in Qatar were partly offset by mature field decline. Earnings from U.S. Upstream operations for 2006 were \$5,168 million, a decrease of \$1,032 million. Earnings outside the U.S. for 2006 were \$21,062 million, an increase of \$2,913 million, including a \$1,620 million gain related to the Dutch gas restructuring in 2005.

#### 2005

Upstream earnings totaled \$24,349 million, including \$1,620 million from a gain related to the Dutch gas restructuring. Absent this, Upstream earnings increased \$6,054 million from 2004 due to higher liquids and natural gas realizations, partly offset by lower production volumes. Oil-equivalent production was down 4 percent versus 2004 including the impact of hurricanes Katrina and Rita, as well as divestment and entitlement effects. Excluding these impacts, total oil-equivalent production decreased by 1 percent. Liquids production of 2,523 kbd decreased by 48 kbd from 2004. Production increases from new projects in West Africa, the North Sea and North America were offset by natural field decline in mature areas, the impact of hurricanes Katrina and Rita, as well as divestment and entitlement effects. Natural gas production of 9,251 mcfd decreased 613 mcfd from 2004. Higher volumes from projects in Qatar, the North Sea and North America were offset by mature field decline, the impact of hurricanes Katrina and Rita, maintenance activity, lower European demand, as well as entitlement and divestment impacts. Improved earnings from both U.S. and non-U.S. Upstream operations were driven by higher liquids and natural gas realizations, partly offset by lower production volumes. Earnings from U.S. Upstream operations for 2005 were \$6,200 million, an increase of \$1,252 million. Earnings outside the U.S. for 2005, including the \$1,620 million gain related to the Dutch gas restructuring, were \$18,149 million, an increase of \$6,422 million.

### Downstream

	2006	2005	2004	
Charte.	(mil.	(millions of dollars)		
Downstream				
United States	\$4,250	\$3,911	\$2,186	
Non-U.S.	4,204	4,081	3,520	
		$\overline{}$		
Total	\$8,454	\$7,992	\$5,706	

# 2006

Downstream earnings totaled \$8,454 million, an increase of \$462 million from 2005 including a \$310 million gain for the 2005 Sinopec share sale and a special charge of \$200 million related to the 2005 Allapattah lawsuit provision. Stronger worldwide refining and marketing margins were partly offset by lower refining throughput. Petroleum product sales of 7,247 kbd decreased from 7,519 kbd in 2005, primarily due to lower refining throughput and divestment impacts. Refinery throughput was 5,603 kbd compared with 5,723 kbd in 2005. U.S. Downstream earnings of \$4,250 million increased by \$339 million, including a 2005 special charge related to the

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Allapattah lawsuit provision. Non-U.S. Downstream earnings of \$4,204 million were \$123 million higher than 2005 earnings which included a gain for the Sinopec share sale.

# 2005

Downstream earnings totaled \$7,992 million, including a gain of \$310 million for the Sinopec share sale and a special charge of \$200 million relating to the Allapattah lawsuit provision. Downstream earnings for 2004 also included a charge of \$550 million for Allapattah. Absent these, Downstream earnings increased \$1,626 million from 2004, reflecting stronger worldwide refining margins partly offset by weaker marketing margins. Petroleum product sales (net) of 7,519 kbd increased from 7,511 kbd in 2004. Refinery throughput was 5,723 kbd compared with 5,713 kbd in 2004. U.S. Downstream earnings of \$3,911 million increased by \$1,725 million, including the charges in both years related to Allapattah. Non-U.S. Downstream earnings of \$4,081 million, including a gain for the Sinopec share sale, were \$561 million higher than 2004.

### Chemical

	2000	2003	2004
Chemical	(millions o		ars)
United States Non-U.S.	\$1,360 3,022	\$1,186 2,757	\$1,020 2,408
Total	\$4,382	\$3,943	\$3,428

#### 2006

Chemical earnings totaled \$4,382 million, an increase of \$439 million from 2005, including a \$390 million gain from the favorable resolution of joint venture litigation in 2005 and a \$150 million gain for the 2005 Sinopec share sale. Increased 2006 earnings were driven by higher margins and increased sales volumes. Prime product sales were 27,350 kt (thousands of metric tons), an increase of 573 kt. Prime product sales are total chemical product sales including ExxonMobil's share of equity-company volumes and finished-product transfers to the Downstream business. Carbon black oil and sulfur volumes are excluded. U.S. Chemical earnings of \$1,360 million increased by \$174 million. Non-U.S. Chemical earnings of \$3,022 million were \$265 million

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higher than 2005 earnings, which included gains from the favorable resolution of joint venture litigation and the Sinopec share sale.

#### 2005

Chemical earnings totaled \$3,943 million, including a \$390 million gain from the favorable resolution of joint venture litigation and \$150 million from a gain on the Sinopec share sale. Absent these, Chemical earnings decreased \$25 million from 2004 due to lower volumes, partly offset by higher worldwide margins. Prime product sales were 26,777 kt, a decrease of 1,011 kt from 2004, largely reflecting the impact of hurricanes Katrina and Rita. U.S. Chemical earnings of \$1,186 million increased by \$166 million. Non-U.S. Chemical earnings increased by \$349 million to \$2,757 million, including the impact of the gain from the resolution of the joint venture litigation of \$390 million and a gain of \$150 million on the Sinopec share sale.

# Corporate and Financing

	2006	2005	2004	
		_		
	(mil	lions of doll	lollars)	
Corporate and financing	\$ 434	\$(154)	\$(479)	

#### 2006

The corporate and financing segment contributed \$434 million to earnings in 2006, up \$588 million from 2005, primarily due to a \$410 million gain from tax benefits related to historical investments in non-U.S. assets and higher interest income.

#### 2005

Corporate and financing expenses were \$154 million compared with \$479 million in 2004. The decrease of \$325 million is mainly due to higher interest income.

# LIQUIDITY AND CAPITAL RESOURCES

# Sources and Uses of Cash

	2006	2005
Access to the contract of the	(millions of dollars)	
Net cash provided by/(used in)		
Operating activities	\$ 49,286	\$ 48,138
Investing activities	(14,230)	(10,270)
Financing activities	(36,210)	(26,941)
Effect of exchange rate changes	727	(787)
Increase/(decrease) in cash and cash equivalents	\$ (427)	\$ 10,140
	(Dec 31)	
Cash and cash equivalents	\$ 28,244	\$ 28,671
Cash and cash equivalents - restricted	4,604	4,604
Total cash and cash equivalents	\$ 32,848	\$ 33,275
b and a next most man additions	<b>\$ 32,010</b>	2 22,12,10

Cash and cash equivalents were \$28,244 million at the end of 2006, comparable to the prior year, as a net reduction from operating, investing and financing activities was partly offset by \$727 million of positive foreign exchange effects from the general weakening of the U.S. dollar in 2006. Including restricted cash and cash equivalents of \$4,604 million (see note 3 and note 15), total cash and cash equivalents were \$32,848 million at the end of 2006. Cash and cash equivalents were \$28,671 million at the end of 2005, an increase of \$10,140 million from 2004, including \$787 million of negative foreign exchange rate effects from the general strengthening of the U.S. dollar in 2005. Including restricted cash and cash equivalents of \$4,604 million, total cash and cash equivalents were \$33,275 million at the end of 2005. Cash flows from operating, investing and financing activities are discussed below. For additional details, see the Consolidated Statement of Cash Flows.

Although the Corporation issues long-term debt from time to time and maintains a revolving commercial paper program, internally generated funds cover the majority of its financial requirements. The management of cash that may be temporarily available as surplus

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to the Corporation's immediate needs is carefully controlled, both to optimize returns on cash balances, and to ensure that it is secure and readily available to meet the Corporation's cash requirements as they arise.

The Corporation will need to continually find and develop new fields, and continue to develop and apply new technologies and recovery processes to existing fields, in order to maintain or increase production and resulting cash flows in future periods. After a period of production at plateau rates, it is the nature of oil and gas fields eventually to produce at declining rates for the remainder of their economic life. Averaged over all our existing oil and gas fields and without new projects, ExxonMobil's entitlement production is expected to decline at approximately six percent per year through the end of the decade, consistent with recent historical performance. Decline rates can vary widely by individual field due to a number of factors, including, but not limited to, the type of reservoir, fluid properties, recovery mechanisms, and age of the field. Furthermore, the Corporation's production entitlements for individual fields can vary with price and contractual terms.

The Corporation has long been successful at offsetting the effects of natural field decline through disciplined investments and anticipates similar results in the future. Projects are in progress or planned to increase production capacity. However, these volume increases are subject to a variety of risks including project start-up timing, operational outages, reservoir performance, crude oil and natural gas prices, weather events, and regulatory changes. The Corporation's cash flows are also highly dependent on crude oil and natural gas prices.

The Corporation's financial strength, as evidenced by its AAA/Aaa debt rating, enables it to make large, long-term capital expenditures. Capital and exploration expenditures in 2006 were \$19.9 billion, reflecting the Corporation's continued active investment program. The Corporation expects spending to continue in this range for the next several years, although actual spending could vary depending on progress of individual projects. The Corporation has a large and diverse portfolio of development projects and exploration opportunities, which helps mitigate the overall political and technical risks of the Corporation's Upstream segment and associated cash flow. Further, due to its financial strength, debt capacity and diverse portfolio of opportunities, the risk associated with failure or delay of any single project would not have a significant impact on the Corporation's liquidity or ability to generate sufficient cash flows for operations and its fixed commitments. The purchase and sale of oil and gas properties have not had a significant impact on the amount or timing of cash flows from operating activities.

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS Cash Flow from Operating Activities

### 2006

Cash provided by operating activities totaled \$49.3 billion in 2006, a \$1.1 billion increase from 2005. The major source of funds was net income of \$39.5 billion, adjusted for the noncash provision of \$11.4 billion for depreciation and depletion, both of which increased. The net timing effects of receipts of notes and accounts receivable, payments of accounts and other payables and contributions to pension funds in 2006 provided a partial offset.

# 2005

Cash provided by operating activities totaled \$48.1 billion in 2005, a \$7.6 billion increase from 2004. The major source of funds was net income of \$36.1 billion, which increased \$10.8 billion. The adjustment for the noncash provision for depreciation and depletion was \$10.3 billion. Contributing to the increased level of cash provided by operating activities in 2005 was the net timing effects of receipts of notes and accounts receivable and payments of accounts and other payables in a rising price environment.

# Cash Flow from Investing Activities

### 2006

Cash used in investing activities totaled \$14.2 billion in 2006, \$4.0 billion higher than 2005. Spending for property, plant and equipment increased \$1.6 billion. Proceeds from the sales of subsidiaries, investments and property, plant and equipment of \$3.1 billion in 2006 decreased \$3.0 billion, reflecting a lower level of asset sales and the absence of almost \$1.4 billion from the sale of the Corporation's interest in Sinopec in 2005.

#### 2005

Cash used in investing activities totaled \$10.3 billion in 2005, \$4.6 billion lower than 2004. In 2004, the Corporation pledged \$4.6 billion as bond collateral for a litigation appeal. Spending for property, plant and equipment increased \$1.9 billion. Proceeds from the sales of subsidiaries, investments and property, plant and equipment of \$6.0 billion in 2005 increased \$3.3 billion, including almost \$1.4 billion from the sale of the Corporation's interest in Sinopec.

# Cash Flow from Financing Activities

#### 2006

Cash used in financing activities was \$36.2 billion, an increase of \$9.3 billion from 2005, reflecting a higher level of purchases of ExxonMobil shares. Dividend payments on common shares increased to \$1.28 per share from \$1.14 per share and totaled \$7.6 billion, a payout of 19 percent. Total consolidated short-term and long-term debt increased \$0.3 billion to \$8.3 billion at year-end 2006.

Shareholders' equity increased \$2.7 billion in 2006, to \$113.8 billion, reflecting \$39.5 billion of net income reduced by distributions to ExxonMobil shareholders of \$7.6 billion of dividends and \$25.0 billion of purchases of shares of ExxonMobil stock to reduce shares outstanding. Shareholders' equity, and net assets and liabilities, increased \$2.8 billion, representing the foreign exchange translation effects of stronger foreign currencies at the end of 2006 on ExxonMobil's operations outside the United States. Recognition of the "Postretirement benefits reserves adjustment" under Financial Accounting Standard No. 158 (see note 2) reduced shareholders' equity by \$6.5 billion.

During 2006, Exxon Mobil Corporation purchased 451 million shares of its common stock for the treasury at a gross cost of \$29.6 billion. These purchases were to reduce the number of shares outstanding and to offset shares issued in conjunction with company benefit plans and programs. Shares outstanding were reduced by 6.6 percent from 6,133 million at the end of 2005 to 5,729 million at the end of 2006. Purchases were made in both the open market and through negotiated transactions. Purchases may be increased, decreased or discontinued at any time without prior notice.

### 2005

Cash used in financing activities was \$26.9 billion, an increase of \$8.7 billion from 2004, reflecting a higher level of purchases of ExxonMobil shares. Dividend payments on common shares increased to \$1.14 per share from \$1.06 per share and totaled \$7.2 billion, a payout of 20 percent. Total consolidated short-term and long-term debt declined \$0.3 billion to \$8.0 billion at year-end 2005.

Shareholders' equity increased \$9.5 billion in 2005, to \$111.2 billion, reflecting \$36.1 billion of net income partly offset by distributions to ExxonMobil shareholders of \$7.2 billion of dividends and \$16.0 billion of purchases of shares of ExxonMobil stock to reduce shares outstanding. Shareholders' equity, and net assets and liabilities, decreased \$2.6 billion, representing the foreign exchange

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translation effects of weaker foreign currencies at the end of 2005 on ExxonMobil's operations outside the United States.

During 2005, Exxon Mobil Corporation purchased 311 million shares of its common stock for the treasury at a gross cost of \$18.2 billion. These purchases were to reduce the number of shares outstanding and to offset shares issued in conjunction with company benefit plans and programs. Shares outstanding were reduced by 4.2 percent from 6,401 million at the end of 2004 to 6,133 million at the end of 2005. Purchases were made in both the open market and through negotiated transactions.

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#### Commitments

Set forth below is information about the outstanding commitments of the Corporation's consolidated subsidiaries at December 31, 2006. It combines data from the Consolidated Balance Sheet and from individual notes to the Consolidated Financial Statements.

		Payments Due by Period					
Commitments	Note Reference Number	2007	2008- 2011	2012 and Beyond	Total		
		(n	illions of dolla	ars)			
Long-term debt (1)	13	\$ -	\$ 684	\$ 5,961	\$ 6,645		
- Due in one year (2)		459	-		459		
Asset retirement obligations (3)	8	266	1,167	3,270	4,703		
Pension and other postretirement obligations (4)	16	1,318	3,144	10,002	14,464		
Operating leases (5)	10	2,252	4,361	2,090	8,703		
Unconditional purchase obligations (6)	15	587	1,797	1,599	3,983		
Take-or-pay obligations (7)		780	2,474	2,036	5,290		
Firm capital commitments (8)		5,024	2,823	1,186	9,033		

This table excludes commodity purchase obligations (volumetric commitments but no fixed or minimum price) which are resold shortly after purchase, either in an active, highly liquid market or under long-term, unconditional sales contracts with similar pricing terms. Examples include long-term, noncancelable LNG and natural gas purchase commitments and commitments to purchase refinery products at market prices. Inclusion of such commitments would not be meaningful in assessing liquidity and cash flow, because these purchases will be offset in the same periods by cash received from the related sales transactions.

#### Notes:

(1) Includes capitalized lease obligations of \$220 million.

(2) The amount due in one year is included in notes and loans payable of \$1,702 million (note 5).

(3) The discounted present value of upstream asset retirement obligations, primarily asset removal costs at the completion of field life.

(4) The amount by which the benefit obligations exceeded the fair value of fund assets for certain U.S. and non-U.S. pension and other postretirement plans at year end. The payments by period include expected contributions to funded pension plans in 2007 and estimated benefit payments for unfunded plans in all years.

(5) Minimum commitments for operating leases, shown on an undiscounted basis, cover drilling equipment, tankers, service stations and other properties.

(6) Unconditional purchase obligations (UPOs) are those long-term commitments that are noncancelable and that third parties have used to secure financing for the facilities that will provide the contracted goods or services. The undiscounted obligations of \$3,983 million mainly pertain to pipeline throughput agreements and include \$2,039 million of obligations to equity companies. The present value of the total commitments, excluding imputed interest of \$1,127 million, was \$2,856 million.

(7) Take-or-pay obligations are noncancelable, long-term commitments for goods and services other than UPOs. The undiscounted obligations of \$5,290 million mainly pertain to pipeline and terminaling agreements and include \$1,847 million of obligations to equity companies. The present value of the total commitments, excluding imputed interest of \$1,118 million, totaled \$4,172 million.

(8) Firm commitments related to capital projects, shown on an undiscounted basis, totaled approximately \$9.0 billion. These commitments were predominantly associated with Upstream projects outside the U.S., of which \$3.2 billion was associated with LNG projects in Qatar and natural gas projects in Malaysia. The Corporation expects to fund the majority of these projects through internal cash flow.

# Guarantees

11.6

The Corporation and certain of its consolidated subsidiaries were contingently liable at December 31, 2006, for \$4,252 million, primarily relating to guarantees for notes, loans and performance under contracts (note 15). Included in this amount were guarantees by consolidated affiliates of \$3,507 million, representing ExxonMobil's share of obligations of certain equity companies. The belowmentioned guarantees are not reasonably likely to have a material effect on the Corporation's financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Dec. 31, 2006		
Equity	Other	
Company	Third-Party	

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	Obligations	Obligations	Total
	(millions of		
Total guarantees	\$ 3,507	\$ 745	\$4,252

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS Financial Strength

On December 31, 2006, unused credit lines for short-term financing totaled approximately \$5.8 billion (note 5).

The table below shows the Corporation's fixed-charge coverage and consolidated debt-to-capital ratios. The data demonstrate the Corporation's creditworthiness. Throughout this period, the Corporation's long-term debt securities maintained the top credit rating from both Standard and Poor's (AAA) and Moody's (Aaa), a rating it has sustained for 88 years.

	2006	2005	2004
Fixed-charge coverage ratio (times)	46.3	50.2	36.1
Debt to capital (percent)	6.6	6.5	7.3
Net debt to capital (percent) (1)	(20.4)	(22.0)	(10.7)
Credit rating	AAA/Aaa	AAA/Aaa	AAA/Aaa

(1) Debt net of cash, excluding restricted cash. The ratio of net debt to capital including restricted cash is (26.3) percent for 2006.

Management views the Corporation's financial strength, as evidenced by the above financial ratios and other similar measures, to be a competitive advantage of strategic importance. The Corporation's sound financial position gives it the opportunity to access the world's capital markets in the full range of market conditions, and enables the Corporation to take on large, long-term capital commitments in the pursuit of maximizing shareholder value.

The Corporation makes limited use of derivative instruments, which are discussed in note 12.

#### Litigation and Other Contingencies

As discussed in note 15, a number of lawsuits, including class actions, were brought in various courts against Exxon Mobil Corporation and certain of its subsidiaries relating to the accidental release of crude oil from the tanker Exxon Valdez in 1989. All of the compensatory claims have been resolved and paid. All of the punitive damage claims were consolidated in the civil trial that began in 1994. The first judgment from the United States District Court for the District of Alaska in the amount of \$5 billion was vacated by the United States Court of Appeals for the Ninth Circuit as being excessive under the Constitution. The second judgment in the amount of \$4 billion was vacated by the Ninth Circuit panel without argument and sent back for the District Court to reconsider in light of the recent U.S. Supreme Court decision in Campbell v. State Farm. The most recent District Court judgment for punitive damages was for \$4.5 billion plus interest and was entered in January 2004. The Corporation posted a \$5.4 billion letter of credit. ExxonMobil and the plaintiffs appealed this decision to the Ninth Circuit, which ruled on December 22, 2006, that the award be reduced to \$2.5 billion. On January 12, 2007, ExxonMobil petitioned the Ninth Circuit Court of Appeals for a rehearing en banc of its appeal. While it is reasonably possible that a liability for punitive damages may have been incurred from the Exxon Valdez grounding, it is not possible to predict the ultimate outcome or to reasonably estimate any such potential liability.

In December 2000, a jury in the 15th Judicial Circuit Court of Montgomery County, Alabama, returned a verdict against the Corporation in a dispute over royalties in the amount of \$88 million in compensatory damages and \$3.4 billion in punitive damages in the case of Exxon Corporation v. State of Alabama, et al. The verdict was upheld by the trial court in May 2001. In December 2002, the Alabama Supreme Court vacated the \$3.5 billion jury verdict. The case was retried and in November 2003, a state district court jury in Montgomery, Alabama, returned a verdict against Exxon Mobil Corporation. The verdict included \$63.5 million in compensatory damages and \$11.8 billion in punitive damages. In March 2004, the district court judge reduced the amount of punitive damages to \$3.5 billion. ExxonMobil believes the judgment is not justified by the evidence, that any punitive damage award is not justified by either the facts or the law, and that the amount of the award is grossly excessive and unconstitutional. ExxonMobil has appealed the decision to the Alabama Supreme Court. The Alabama Supreme Court heard oral arguments on February 6, 2007. Management believes that the likelihood of the judgment being upheld is remote. While it is reasonably possible that a liability may have been incurred by ExxonMobil from this dispute over royalties, it is not possible to predict the ultimate outcome or to reasonably estimate any such potential liability. In May 2004, the Corporation posted a \$4.5 billion supersedeas bond as required by Alabama law to stay execution of the judgment pending appeal. The Corporation has pledged to the issuer of the bond collateral consisting of cash and short-term, high-quality securities with an aggregate value of approximately \$4.6 billion. This collateral is reported as restricted cash and cash equivalents on the Consolidated Balance Sheet. Under the terms of the pledge agreement, the Corporation is entitled to receive the income generated from the cash and securities and to make investment decisions, but is restricted from using the pledged cash and securities for any other purpose until such time the bond is canceled.

In 2001, a Louisiana state court jury awarded compensatory damages of \$56 million and punitive damages of \$1 billion to a landowner for damage caused by a third party that leased the property from the landowner. The third party provided pipe cleaning and storage services for the Corporation and other entities. The Louisiana Fourth Circuit Court of Appeals reduced the punitive damage

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award to \$112 million in 2005. The Corporation appealed this decision to the Louisiana Supreme Court which, in March 2006, refused to hear the appeal. ExxonMobil has fully accrued and paid the compensatory and punitive damage awards. The Corporation appealed the punitive damage award to the U.S. Supreme Court, which on February 26, 2007, vacated the judgment and remanded the case to the Louisiana Fourth Circuit Court of Appeals for reconsideration in light of the recent U.S. Supreme Court decision in Williams v. Phillip Morris USA.

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In Allapattah v. Exxon, a jury in the United States District Court for the Southern District of Florida determined in 2001 that a class of Exxon dealers between March 1983 and August 1994 had been overcharged for gasoline. In June 2003, the Eleventh Circuit Court of Appeals affirmed the judgment and in March 2004, denied a petition for a rehearing en banc. In October 2004, the U.S. Supreme Court granted review as to whether the class in the District Court judgment should include members that individually do not satisfy the \$50,000 minimum amount-in-controversy requirement in federal court. In light of the Supreme Court's decision to grant review of only part of ExxonMobil's appeal, the Corporation took an after-tax charge of \$550 million in the third quarter of 2004 reflecting the estimated liability, after considering potential set-offs and defenses for the claims under review by the Supreme Court. In June 2005, the Supreme Court granted the District Court the right to hear the claims of all class members and the Corporation took an after-tax charge of \$200 million. The District Court has given final approval of a settlement of \$1,075 million, pre-tax. This obligation has been fully accrued and was paid in the second quarter 2006.

Tax issues for 1989 to 1993 remain pending before the U.S. Tax Court. The ultimate resolution of these issues is not expected to have a materially adverse effect upon the Corporation's operations or financial condition.

Based on a consideration of all relevant facts and circumstances, the Corporation does not believe the ultimate outcome of any currently pending lawsuit against ExxonMobil will have a materially adverse effect upon the Corporation's operations or financial condition. There are no events or uncertainties known to management beyond those already included in reported financial information that would indicate a material change in future operating results or financial condition.

#### CAPITAL AND EXPLORATION EXPENDITURES

		.000	2005	
	u.s.	Non-U.S.	u.s.	Non-U.S.
		(millions of dollars)		
Upstream (1)	\$2,486	\$13,745	\$2,142	\$12,328
Downstream	824	1,905	753	1,742
Chemical	280	476	243	411
Other	130	9	80	
Total	\$3,720	\$16,135	\$3,218	\$14,481

#### (1) Exploration expenses included.

Capital and exploration expenditures in 2006 were \$19.9 billion, reflecting the Corporation's continued active investment program. The Corporation expects spending to continue in this range for the next several years. Actual spending could vary depending on the progress of individual projects.

Upstream spending was up 12 percent to \$16.2 billion in 2006, from \$14.5 billion in 2005, as a result of higher spending in growth areas such as Qatar, Abu Dhabi and West Africa. In addition, spending in the United States and the North Sea was also higher. During the past three years, Upstream capital and exploration expenditures averaged \$14.1 billion. The majority of these expenditures are on development projects, which typically take two to four years from the time of recording proved undeveloped reserves to the start of production from those reserves. The percentage of proved developed reserves has remained relatively stable over the past five years at over 60 percent of total proved reserves, indicating that proved reserves are consistently moved from undeveloped to developed status. Capital and exploration expenditures are not tracked by the undeveloped and developed proved reserve categories. Capital investments in the Downstream totaled \$2.7 billion in 2006, up \$0.2 billion from 2005. Chemical capital expenditures were up \$0.1 billion from 2005.

#### TAXES

	2006	2006 2005		
With Tables		(millions of dollars)		
Income taxes	\$ 27,902	\$23,302	\$15,911	
Sales-based taxes	30,381	30,742	27,263	
All other taxes and duties	42,393	44,571	43,605	
Total	\$100,676	\$98,615	\$86,779	

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Effective income tax rate 43% 41% 40%

#### 2006

Income, sales-based and all other taxes and duties totaled \$100.7 billion in 2006, an increase of \$2.1 billion or 2 percent from 2005. Income tax expense, both current and deferred, was \$27.9 billion, \$4.6 billion higher than 2005, reflecting higher pre-tax income in 2006. The effective tax rate was 43 percent in 2006, compared to 41 percent in 2005. During both periods, the Corporation continued to benefit from the favorable resolution of tax-related issues. Sales-based and all other taxes and duties of \$72.8 billion in 2006 decreased \$2.5 billion from 2005, reflecting the tax impact of net reporting of purchases and sales of inventory with the same counterparty, only partly offset by the effects of higher prices.

#### 2005

Income, sales-based and all other taxes and duties totaled \$98.6 billion in 2005, an increase of \$11.8 billion or 14 percent from 2004. Income tax expense, both current and deferred, was \$23.3 billion, \$7.4 billion higher than 2004, reflecting higher pre-tax income in 2005. The effective tax rate was 41 percent in 2005, compared to 40 percent in 2004. During both periods, the Corporation continued to benefit from the favorable resolution of tax-related issues. Sales-based and all other taxes and duties of \$75.3 billion in 2005 increased \$4.4 billion from 2004, reflecting higher prices and foreign exchange effects.

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS ENVIRONMENTAL MATTERS

### **Environmental Expenditures**

	(millions of dollars)
Capital expenditures	\$ 1,081 \$ 1,240
Other expenditures	2,127 2,089
	Tarana and the same of the sam
Total	\$ 3,208 \$ 3,329

Throughout ExxonMobil's businesses, new and ongoing measures are taken to prevent and minimize the impact of our operations on air, water and ground. These include a significant investment in refining infrastructure and technology to manufacture clean fuels as well as projects to reduce nitrogen oxide and sulfur oxide emissions and expenditures for asset retirement obligations. ExxonMobil's 2006 worldwide environmental expenditures for all such preventative and remediation steps, including ExxonMobil's share of equity company expenditures, were about \$3.2 billion. The total cost for such activities is expected to remain in this range in 2007 and 2008 (with capital expenditures approximately 40 percent of the total).

#### **Environmental Liabilities**

The Corporation accrues liabilities for environmental liabilities when it is probable that obligations have been incurred and the amounts can be reasonably estimated. This policy applies to assets or businesses currently owned or previously disposed. ExxonMobil has accrued liabilities for probable environmental remediation obligations at various sites, including multiparty sites where the U.S. Environmental Protection Agency has identified ExxonMobil as one of the potentially responsible parties. The involvement of other financially responsible companies at these multiparty sites could mitigate ExxonMobil's actual joint and several liability exposure. At present, no individual site is expected to have losses material to ExxonMobil's operations or financial condition. Consolidated company provisions made in 2006 for environmental liabilities were \$350 million (\$487 million in 2005) and the balance sheet reflects accumulated liabilities of \$864 million as of December 31, 2006, and \$849 million as of December 31, 2005.

### **Asset Retirement Obligations**

The fair values of asset retirement obligations are recorded as liabilities on a discounted basis when they are incurred, which is typically at the time assets are installed, with an offsetting amount booked as additions to property, plant and equipment (\$263 million for 2006). Over time, the liabilities are accreted for the increase in their present value, with this effect included in expenses (\$243 million in 2006). Consolidated company expenditures for asset retirement obligations in 2006 were \$238 million and the ending balance of the obligations recorded on the balance sheet at December 31, 2006, totaled \$4,703 million.

## MARKET RISKS, INFLATION AND OTHER UNCERTAINTIES

Worldwide Average Realizations (I)	2006	2005	2004
Crude oil and NGL (\$/barrel) Natural gas (\$/kcf)	 \$58.34 6.08	\$48.23 5.96	\$34.76 4.48

### (1) Consolidated subsidiaries.

Crude oil, natural gas, petroleum product and chemical prices have fluctuated in response to changing market forces. The impacts of these price fluctuations on earnings from Upstream, Downstream and Chemical operations have varied. In the Upstream, based on the 2006 worldwide production levels, a \$1 per barrel change in the weighted-average realized price of oil would have approximately a \$400 million annual after-tax effect on Upstream consolidated plus equity company earnings. Similarly, a \$0.10 per kef change in the worldwide average gas realization would have approximately a \$200 million annual after-tax effect on Upstream consolidated plus equity company earnings. For any given period, the extent of actual benefit or detriment will be dependent on the price movements of individual types of crude oil, taxes and other government take impacts, price adjustment lags in long-term gas contracts, and crude and gas production volumes. Accordingly, changes in benchmark prices for crude oil and natural gas only provide a broad indicator of changes in the earnings experienced in any particular period.

In the very competitive downstream and chemical environments, earnings are primarily determined by margin capture rather than absolute price levels of products sold. Refining margins are a function of the difference between what a refiner pays for its raw

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materials (primarily crude oil) and the market prices for the range of products produced. These prices in turn depend on global and regional supply/demand balances, inventory levels, refinery operations, import/export balances and weather.

The global energy markets can give rise to extended periods in which market conditions are adverse to one or more of the Corporation's businesses. Such conditions, along with the capital-intensive nature of the industry and very long lead times associated with many of our projects, underscore the importance of maintaining a strong financial position. Management views the Corporation's financial strength, including the AAA and Aaa ratings of its long-term debt securities by Standard and Poor's and Moody's, as a competitive advantage.

In general, segment results are not dependent on the ability to sell and/or purchase products to/from other segments. Instead, where such sales take place, they are the result of efficiencies and competitive advantages of integrated refinery/chemical complexes. Additionally, intersegment sales are at market-based prices. The products bought and sold between segments can also be acquired in worldwide markets that have substantial liquidity, capacity and transportation capabilities. About 40 percent of the Corporation's intersegment sales are crude oil produced by the Upstream and sold to the Downstream. Other intersegment sales include those between refineries and chemical plants related to raw materials, feedstocks and finished products.

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Although price levels of crude oil and natural gas may rise or fall significantly over the short to medium term due to political events, OPEC actions and other factors, industry economics over the long term will continue to be driven by market supply and demand. Accordingly, the Corporation tests the viability of all of its assets over a broad range of future prices. The Corporation's assessment is that its operations will continue to be successful in a variety of market conditions. This is the outcome of disciplined investment and asset management programs. Investment opportunities are tested against a variety of market conditions, including low-price scenarios. As a result, investments that would succeed only in highly favorable price environments are screened out of the investment plan.

The Corporation has had an active asset management program in which underperforming assets are either improved to acceptable levels or considered for divestment. The asset management program involves a disciplined, regular review to ensure that all assets are contributing to the Corporation's strategic and financial objectives. The result has been the creation of a very efficient capital base and has meant that the Corporation has seldom been required to write down the carrying value of assets, even during periods of low commodity prices.

#### Risk Management

The Corporation's size, strong capital structure, geographic diversity and the complementary nature of the Upstream, Downstream and Chemical businesses reduce the Corporation's enterprise-wide risk from changes in interest rates, currency rates and commodity prices. As a result, the Corporation makes limited use of derivative instruments to mitigate the impact of such changes. The Corporation does not engage in speculative derivative activities or derivative trading activities nor does it use derivatives with leveraged features. The Corporation maintains a system of controls that includes the authorization, reporting and monitoring of derivative activity. The Corporation's limited derivative activities pose no material credit or market risks to ExxonMobil's operations, financial condition or liquidity. Note 12 summarizes the fair value of derivatives outstanding at year end and the gains or losses that have been recognized in net income.

The Corporation is exposed to changes in interest rates, primarily as a result of its short-term debt and long-term debt carrying floating interest rates. The impact of a 100-basis-point change in interest rates affecting the Corporation's debt would not be material to earnings, cash flow or fair value. The Corporation's cash balances exceeded total debt at year-end 2006 and 2005.

The Corporation conducts business in many foreign currencies and is subject to exchange rate risk on cash flows related to sales, expenses, financing and investment transactions. The impacts of fluctuations in exchange rates on ExxonMobil's geographically and functionally diverse operations are varied and often offsetting in amount. The Corporation makes limited use of currency exchange contracts, commodity forwards, swaps and futures contracts to mitigate the impact of changes in currency values and commodity prices. Exposures related to the Corporation's limited use of the above contracts are not material.

#### Inflation and Other Uncertainties

The general rate of inflation in most major countries of operation has been relatively low in recent years and the associated impact on costs has generally been countered by cost reductions from efficiency and productivity improvements. Increased global demand for certain services and materials has resulted in higher operating and capital costs in recent years. The Corporation continues to mitigate these effects through its economies of scale in global procurement and its efficient project management practices.

### RECENTLY ISSUED STATEMENTS OF FINANCIAL ACCOUNTING STANDARDS

## Accounting for Uncertainty in Income Taxes

In June 2006 the Financial Accounting Standards Board (FASB) issued FASB Interpretation No. 48 (FIN 48), "Accounting for Uncertainty in Income Taxes." FIN 48 is an interpretation of FASB Statement No. 109, "Accounting for Income Taxes," and must be adopted by the Corporation no later than January 1, 2007. FIN 48 prescribes a comprehensive model for recognizing, measuring, presenting and disclosing in the financial statements uncertain tax positions that the company has taken or expects to take in its returns. The Corporation expects to recognize a transition gain of approximately \$0.3 billion in shareholders' equity upon adoption of FIN 48 in the first quarter of 2007. This gain reflects the recognition of several refund claims, partly offset by increased liability reserves.

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS CRITICAL ACCOUNTING POLICIES

The Corporation's accounting and financial reporting fairly reflect its straightforward business model involving the extracting, refining and marketing of hydrocarbons and hydrocarbon-based products. The preparation of financial statements in conformity with U.S. Generally Accepted Accounting Principles (GAAP) requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. The following summary provides further information about the critical accounting policies and the judgments that are made by the Corporation in the application of those policies.

#### Oil and Gas Reserves

Evaluations of oil and gas reserves are important to the effective management of Upstream assets. They are integral to making investment decisions about oil and gas properties such as whether development should proceed or enhanced recovery methods should be undertaken. Oil and gas reserve quantities are also used as the basis for calculating unit-of-production depreciation rates and for evaluating impairment. Oil and gas reserves are divided between proved and unproved reserves. Proved reserves are the estimated quantities of crude oil, natural gas and natural gas liquids that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions; i.e., prices and costs as of the date the estimate is made. Unproved reserves are those with less than reasonable certainty of recoverability and include probable reserves. Probable reserves are reserves that are more likely to be recovered than not.

The estimation of proved reserves, which is based on the requirement of reasonable certainty, is an ongoing process based on rigorous technical evaluations, commercial and market assessment, and detailed analysis of well information such as flow rates and reservoir pressure declines. The estimation of proved reserves is controlled by the Corporation through long-standing approval guidelines. Reserve changes are made within a well-established, disciplined process driven by senior level geoscience and engineering professionals (assisted by a central reserves group with significant technical experience), culminating in reviews with and approval by senior management. Notably, the Corporation does not use specific quantitative reserve targets to determine compensation.

Key features of the reserves estimation process include:

- rigorous peer-reviewed technical evaluations and analysis of well and field performance information (such as flow rates and reservoir pressure declines) and
- a requirement that management make significant funding commitments toward the development of the reserves prior to booking.

Although the Corporation is reasonably certain that proved reserves will be produced, the timing and amount recovered can be affected by a number of factors including completion of development projects, reservoir performance, regulatory approvals and significant changes in long-term oil and gas price levels.

Proved reserves can be further subdivided into developed and undeveloped reserves. The percentage of proved developed reserves has remained relatively stable over the past five years at over 60 percent of total proved reserves (including both consolidated and equity company reserves), indicating that proved reserves are consistently moved from undeveloped to developed status. Over time, these undeveloped reserves will be reclassified to the developed category as new wells are drilled, existing wells are recompleted and/or facilities to collect and deliver the production from existing and future wells are installed. Major development projects typically take two to four years from the time of recording proved reserves to the start of production from these reserves.

Beginning in 2004, the year-end reserves volumes as well as the reserves change categories shown in the proved reserves tables are calculated using December 31 prices and costs. These reserves quantities are also used in calculating unit-of-production depreciation rates and in calculating the standardized measure of discounted net cash flow. Regulations preclude the Corporation from showing in this document the reserves that are calculated in a manner that is consistent with the basis that the Corporation uses to make its investment decisions. The use of year-end prices for reserves estimation introduces short-term price volatility into the process since annual adjustments are required based on prices occurring on a single day. The Corporation believes that this approach is inconsistent with the long-term nature of the upstream business where production from individual projects often spans multiple decades. The use of prices from a single date is not relevant to the investment decisions made by the Corporation and annual variations in reserves based on such year-end prices are not of consequence to how the business is actually managed.

Revisions can include upward or downward changes in previously estimated volumes of proved reserves for existing fields due to the evaluation or re-evaluation of (1) already available geologic, reservoir or production data, (2) new geologic, reservoir or production data or (3) changes in year-end prices and costs that are used in the determination of reserves. This category can also include changes associated with the performance of improved recovery projects and significant changes in either development strategy or production

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equipment/facility capacity.

The Corporation uses the "successful efforts" method to account for its exploration and production activities. Under this method, costs are accumulated on a field-by-field basis with certain exploratory expenditures and exploratory dry holes being expensed as incurred. Costs of productive wells and development dry holes are capitalized and amortized on the unit-of-production method. The Corporation uses this accounting policy instead of the "full cost" method because it provides a more timely accounting of the success or failure of the Corporation's exploration and production activities. If the full cost method were used, all costs would be capitalized and depreciated on a country-by-country basis. The capitalized costs would be subject to an impairment test by country. The full cost method would tend to delay the expense recognition of unsuccessful projects.

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Impact of Oil and Gas Reserves on Depreciation. The calculation of unit-of-production depreciation is a critical accounting estimate that measures the depreciation of upstream assets. It is the ratio of actual volumes produced to total proved developed reserves (those proved reserves recoverable through existing wells with existing equipment and operating methods), applied to the asset cost. The volumes produced and asset cost are known and, while proved developed reserves have a high probability of recoverability, they are based on estimates that are subject to some variability. While the revisions the Corporation has made in the past are an indicator of variability, they have had a very small impact on the unit-of-production rates because they have been small compared to the large reserves base.

Impact of Oil and Gas Reserves and Prices on Testing for Impairment. Proved oil and gas properties held and used by the Corporation are reviewed for impairment whenever events or circumstances indicate that the carrying amounts may not be recoverable. Assets are grouped at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other groups of assets.

The Corporation estimates the future undiscounted cash flows of the affected properties to judge the recoverability of carrying amounts. In general, analyses are based on proved reserves. Where probable reserves exist, an appropriately risk-adjusted amount of these reserves may be included in the impairment evaluation. An asset would be impaired if the undiscounted cash flows were less than its carrying value. Impairments are measured by the amount by which the carrying value exceeds its fair value.

The Corporation performs asset valuation analyses on an ongoing basis as a part of its asset management program. These analyses monitor the performance of assets against corporate objectives. They also assist the Corporation in assessing whether the carrying amounts of any of its assets may not be recoverable. In addition to estimating oil and gas reserve volumes in conducting these analyses, it is also necessary to estimate future oil and gas prices. Trigger events for impairment evaluation include a significant decrease in current and projected prices or reserve volumes, an accumulation of project costs significantly in excess of the amount originally expected, and historical and current operating losses.

In general, the Corporation does not view temporarily low oil and gas prices as a trigger event for conducting the impairment tests. The markets for crude oil and natural gas have a history of significant price volatility. Although prices will occasionally drop significantly, industry prices over the long term will continue to be driven by market supply and demand. On the supply side, industry production from mature fields is declining, but this is being offset by production from new discoveries and field developments. OPEC production policies also have an impact on world oil supplies. The demand side is largely a function of global economic growth. The relative growth/decline in supply versus demand will determine industry prices over the long term and these cannot be accurately predicted. Accordingly, any impairment tests that the Corporation performs make use of the Corporation's price assumptions developed in the annual planning and budgeting process for the crude oil and natural gas markets, petroleum products and chemicals. These are the same price assumptions that are used for capital investment decisions. The corporate plan is a fundamental annual management process that is the basis for setting near-term risk-assessed operating and capital objectives in addition to providing the longer-term economic assumptions used for investment evaluation purposes. Volumes are based on individual field production profiles, which are also updated annually. Prices for natural gas and other products are based on corporate plan assumptions developed annually by major region and used for investment evaluation purposes. Cash flow estimates for impairment testing exclude the use of derivative instruments.

Supplemental information regarding oil and gas results of operations, capitalized costs and reserves is provided following the notes to the financial statements. The standardized measure of discounted future cash flows is based on the year-end 2006 price applied for all future years, as required under Statement of Financial Accounting Standards No. 69 (FAS 69), "Disclosure about Oil and Gas Producing Activities." Future prices used for any impairment tests will vary from the one used in the FAS 69 disclosure and could be lower or higher for any given year.

# Suspended Exploratory Well Costs

The Corporation carries as an asset exploratory well costs when the well has found a sufficient quantity of reserves to justify its completion as a producing well and where the Corporation is making sufficient progress assessing the reserves and the economic and operating viability of the project. Exploratory well costs not meeting these criteria are charged to expense. Assessing whether a project has made sufficient progress is a subjective area and requires careful consideration of the relevant facts and circumstances. The facts and circumstances that support continued capitalization of suspended wells as of year-end 2006 are disclosed in note 9 to the financial statements.

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# MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS Consolidations

The Consolidated Financial Statements include the accounts of those significant subsidiaries that the Corporation controls. They also include the Corporation's share of the undivided interest in certain upstream assets and liabilities. Amounts representing the Corporation's percentage interest in the underlying net assets of other significant affiliates that it does not control, but exercises significant influence, are included in "Investments and advances"; the Corporation's share of the net income of these companies is included in the Consolidated Statement of Income caption "Income from equity affiliates." The accounting for these non-consolidated companies is referred to as the equity method of accounting.

Majority ownership is normally the indicator of control that is the basis on which subsidiaries are consolidated. However, certain factors may indicate that a majority-owned investment is not controlled and therefore should be accounted for using the equity method of accounting. These factors occur where the minority shareholders are granted by law or by contract substantive participating rights. These include the right to approve operating policies, expense budgets, financing and investment plans and management compensation and succession plans.

The Corporation consolidates certain affiliates identified as variable-interest entities in which it has less than a majority ownership, because of guarantees or other arrangements that create majority economic interests in those affiliates that are greater than the Corporation's voting interests.

Additional disclosures of summary balance sheet and income information for those subsidiaries accounted for under the equity method of accounting can be found in note 6.

Investments in companies that are partially owned by the Corporation are integral to the Corporation's operations. In some cases they serve to balance worldwide risks and in others they provide the only available means of entry into a particular market or area of interest. The other parties who also have an equity interest in these companies are either independent third parties or host governments that share in the business results according to their percentage ownership. The Corporation does not invest in these companies in order to remove liabilities from its balance sheet. In fact, the Corporation has long been on record supporting an alternative accounting method that would require each investor to consolidate its percentage share of all assets and liabilities in these partially owned companies rather than only its percentage in the net equity. This method of accounting for investments in partially owned companies is not permitted by GAAP except where the investments are in the direct ownership of a share of upstream assets and liabilities. However, for purposes of calculating return on average capital employed, which is not covered by GAAP standards, the Corporation includes its share of debt of these partially owned companies in the determination of average capital employed.

## Pension Benefits

The Corporation and its affiliates sponsor approximately 100 defined benefit (pension) plans in about 50 countries. The funding arrangement for each plan depends on the prevailing practices and regulations of the countries where the Corporation operates. The Pension and Other Postretirement Benefits note provides details on pension obligations, fund assets and pension expense.

Some of these plans (primarily non-U.S.) provide pension benefits that are paid directly by their sponsoring affiliates out of corporate cash flow rather than a separate pension fund. Book reserves are established for these plans because tax conventions and regulatory practices do not encourage advance funding. The portion of the pension cost attributable to employee service is expensed as services are rendered. The portion attributable to the increase in pension obligations due to the passage of time is expensed over the term of the obligations, which ends when all benefits are paid. The primary difference in pension expense for unfunded versus funded plans is that pension expense for funded plans also includes a credit for the expected long-term return on fund assets.

For funded plans, including many in the United States, pension obligations are financed in advance through segregated assets or insurance arrangements. These plans are managed in compliance with the requirements of governmental authorities and meet or exceed required funding levels as measured by relevant actuarial and government standards at the mandated measurement dates. In determining liabilities and required contributions, these standards often require approaches and assumptions that differ from those used for accounting purposes.

The Corporation will continue to make contributions to these funded plans as necessary. All defined-benefit pension obligations, regardless of the funding status of the underlying plans, are fully supported by the financial strength of the Corporation or the respective sponsoring affiliate.

Pension accounting requires explicit assumptions regarding, among others, the long-term expected earnings rate on fund assets, the discount rate for the benefit obligations and the long-term rate for future salary increases. Pension assumptions are reviewed annually by outside actuaries and senior management. These assumptions are adjusted only as appropriate to reflect changes in market rates and

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outlook. For example, the long-term expected earnings rate on U.S. pension plan assets in 2006 was 9.0 percent. This compares to an actual rate of return over the past decade of 11 percent. The Corporation establishes the long-term expected rate of return by developing a forward-looking, long-term return assumption for each pension fund asset class, taking into account factors such as the expected real return for the specific asset class and inflation. A single, long-term rate of return is then calculated as the weighted average of the target asset allocation and the long-term return assumption for each asset class. A worldwide reduction of 0.5 percent in the pension fund earnings rate would increase annual pension expense by approximately \$120 million before tax.

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Differences between actual returns on fund assets versus the long-term expected return are not recognized in pension expense in the year that the difference occurs. Such differences are deferred, along with other actuarial gains and losses, and are amortized into pension expense over the expected remaining service life of employees. Further details on pension accounting and related disclosures can be found in notes 2 and 16.

# Litigation and Other Contingencies

A variety of claims have been made against the Corporation and certain of its consolidated subsidiaries in a number of pending lawsuits and tax disputes. Management has regular litigation and tax reviews, including updates from corporate and outside counsel, to assess the need for accounting recognition or disclosure of these contingencies. The status of significant claims is summarized in note 15.

GAAP requires that liabilities for contingencies be recorded when it is probable that a liability has been incurred by the date of the balance sheet and that the amount can be reasonably estimated. These amounts are not reduced by amounts that may be recovered under insurance or claims against third parties, but undiscounted receivables from insurers or other third parties may be accrued separately. The Corporation revises such accruals in light of new information. For contingencies where an unfavorable outcome is reasonably possible and which are significant, the Corporation discloses the nature of the contingency and, where feasible, an estimate of the possible loss.

Significant management judgment is required related to contingent liabilities and the outcome of litigation because both are difficult to predict. However, the Corporation has been successful in defending litigation in the past. Payments have not had a materially adverse effect on operations or financial condition. In the Corporation's experience, large claims often do not result in large awards. Large awards are often reversed or substantially reduced as a result of appeal or settlement.

### Foreign Currency Translation

The method of translating the foreign currency financial statements of the Corporation's international subsidiaries into U.S. dollars is prescribed by GAAP. Under these principles, it is necessary to select the functional currency of these subsidiaries. The functional currency is the currency of the primary economic environment in which the subsidiary operates. Management selects the functional currency after evaluating this economic environment, Downstream and Chemical operations use the local currency, except in highly inflationary countries (primarily in Latin America) and Singapore, which uses the U.S. dollar because it predominantly sells into the U.S. dollar export market. Upstream operations also use the local currency as the functional currency, except where crude and natural gas production is predominantly sold in the export market in U.S. dollars. Operations using the U.S. dollar as their functional currency include Malaysia, Indonesia, Angola, Nigeria, Equatorial Guinea, Russia and the Middle East.

Factors considered by management when determining the functional currency for a subsidiary include: the currency used for cash flows related to individual assets and liabilities; the responsiveness of sales prices to changes in exchange rates; whether sales are into local markets or exported; the currency used to acquire raw materials, labor, services and supplies; sources of financing; and significance of intercompany transactions.

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## MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management, including the Corporation's chief executive officer, principal financial officer, and principal accounting officer, is responsible for establishing and maintaining adequate internal control over the Corporation's financial reporting. Management conducted an evaluation of the effectiveness of internal control over financial reporting based on the Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that Exxon Mobil Corporation's internal control over financial reporting was effective as of December 31, 2006.

Management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2006, was audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

Rex W. Tillerson Chief Executive Officer

Donald D. Humphreys Sr. Vice President and Treasurer (Principal Financial Officer) Patrick T. Mulva Vice President and Controller (Principal Accounting Officer)

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

# PRICEWATERHOUSE COPERS @

To the Shareholders of Exxon Mobil Corporation:

We have completed integrated audits of Exxon Mobil Corporation's consolidated financial statements and of its internal control over financial reporting as of December 31, 2006, in accordance with the standards of the Public Company Accounting Oversight Board (United States). Our opinions, based on our audits, are presented below.

# Consolidated financial statements

In our opinion, the consolidated financial statements listed under Item 8 of the Form 10-K present fairly, in all material respects, the financial position of Exxon Mobil Corporation and its subsidiaries at December 31, 2006, and 2005, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2006, in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Corporation's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit of financial statements includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 2 to the consolidated financial statements, the Corporation changed its method of accounting for defined benefit pension and other postretirement plans in 2006.

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# Internal control over financial reporting

Also, in our opinion, management's assessment, included in Management's Report on Internal Control Over Financial Reporting appearing under Item 9A, that the Corporation maintained effective internal control over financial reporting as of December 31, 2006, based on criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), is fairly stated, in all material respects, based on those criteria. Furthermore, in our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2006, based on criteria established in Internal Control – Integrated Framework issued by the COSO. The Corporation's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express opinions on management's assessment and on the effectiveness of the Corporation's internal control over financial reporting based on our audit. We conducted our audit of internal control over financial reporting in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. An audit of internal control over financial reporting includes obtaining an understanding of internal control over financial reporting, evaluating management's assessment, testing and evaluating the design and operating effectiveness of internal control, and performing such other procedures as we consider necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Dallas, Texas February 28, 2007

Lucusterbour Capus LLP

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